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Begun in 1895

VOLUME 109, NUMBER 350 **SEPTEMBER 16, 1996**

Gilbert Dennison Harris:
A Life With Fossils

by

William R. Brice

Foreword

by

Frank H. T. Rhodes

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1259 Trumansburg Road
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DEDICATION

TO THE LOYAL MEMBERS, SUPPORTERS, AND BENEFACTORS
of
THE PALEONTOLOGICAL RESEARCH INSTITUTION
for
KEEPING THE DREAM ALIVE

Leaves may fall and wither and be hidden by a blanket
of snow; yet they have in their infinitesimal way modified the stream of life for all time to come.
Each human life in like small measure deflects the current
of intellect through the ages even after firm granite
has crumbled to dust.
Things unseen alone are immortal.
(G. D. H. '35)[1]

---

[1] Untitled poem written by Gilbert D. Harris in 1935 and found among his papers in the Harris Archives at the Paleontological Research Institution, Ithaca, NY (hereafter abbreviated HA-PRI, Ithaca, NY).

FOREWORD

Frank H. T. Rhodes

President Emeritus
Cornell University
Ithaca, New York 14850

There is a certain fitness in the fact that the man who founded the Paleontological Research Institution – surely one of the most improbable and even quirky of all scientific institutions—and who himself printed all its publications for more than half a century, should be memorialized within the pages of those publications. For it is altogether appropriate that the memory and identity of this man should be preserved within the very publication that he used to preserve, identify, and describe so many long-vanished genera and species. William Brice records in this remarkable volume the life and times of Gilbert Dennison Harris with care and comprehensive thoroughness that do justice to his topic.

Harris was born on a farm near Jamestown, New York, in 1864. After winning a scholarship, he entered Cornell as an undergraduate in 1883 and graduated with a Ph. B. degree in 1886, remaining in Ithaca for a year of further studies. Harris joined the Arkansas Geological Survey in 1888 and, a year later, began work with the U.S. Geological Survey, only to lose that position in 1892 as a result of the depression. He worked briefly with the Texas Geological Survey and was appointed to Cornell in 1894, being offered an instructorship in paleontology at a salary of $1,000 a year with possible subsequent promotion to the rank of Assistant Professor. It says much for Harris's early self-confidence that he bargained Cornell President Jacob Gould Schurman up from $1,000 to $1,400 for an initial starting salary. Schurman himself was no mean bargainer.

Within his eighty-eight years Harris lived a remarkably productive life. In fact, this biography, consummately careful and excruciatingly comprehensive in its detail, gives us an account of not one life but of five.

There is first Harris the pioneer Tertiary paleontologist. Harris devoted his life to a study of the rocks and fossils of the Cenozoic Era, first in Arkansas, Louisiana, and Texas, and later in Europe and various parts of South and Central America and the Caribbean. In association with his students, Harris piled up specimens and was the author of definitive studies of many Tertiary species.

There is also a splendid picture here of a second life: Harris the scientific entrepreneur. Though he was a professor at Cornell, Harris never ceased to be interested in economic geology and throughout virtually the whole of his career served the University on only a half-time basis. Under this arrangement, he was granted leave during the spring term in exchange for teaching field studies during the summer term, together with a normal teaching load during the fall term. During the early part of the year he devoted his time to consulting, either working as a member of the Geological Survey of Louisiana or accepting consulting work with a growing number of oil companies in various parts of the world. This combination of activities proved to be a very beneficial one, bringing as it did hundreds of specimens to Ithaca from every corner of the globe and providing access to geological information that would otherwise have been unobtainable. This proved of significant scientific interest, not only in paleontology, but also, for example, in economic terms, reflected in the fact that Harris was among the first to identify a relationship between salt domes and oil and gas accumulation. This consulting arrangement also raised at an early date a topic that continues to be controversial in the academic world today: conflict of interest. Conflict surfaced in a particularly acute form in this case when Harris and one of his former students were working for competing companies.

The third life in these pages is that of Harris the faculty member, during the formative period of both Cornell University and the Department of Geological Sciences there. It was, I think, Mary McCarthy who once observed that academic politics are so vicious because so little is at stake. One is tempted to remember also Woodrow Wilson's comment on becoming President of the United States when he said that he learned his politics as President of Princeton University and then went to Washington to practice among the amateurs. Harris was not a model professor. He was described as a "wonderfully poor" instructor in lecture classes, who had no set method of instruction, had a poor delivery, was seldom prepared, and was known to arrive at his class with lantern slides still dripping wet from the developing process. Yet he was at his best with small groups of students, especially graduate students, and never more so than in the geology summer field camps that he organized in the

Helderberg School of Field Geology, as it was called in the first decade of the century. The students who were enrolled in these summer programs developed a lasting respect and affection for Harris. During four summers, he undertook extended boat journeys, two of them extending over three thousand miles, to study Tertiary rocks and fossils, in each case in launches that he, himself, had commissioned. The accounts of these early trips – along Cayuga Lake and through the Erie Canal, to the Chesapeake Bay and beyond, are vivid and revealing.

Harris was particularly sympathetic towards the interests of women students in geology and not only enrolled them in field camp before this was generally accepted, but also supervised their graduate studies when few other faculty would do so. His relations with them were not always harmonious, but he was clearly an early advocate of women's interests.

Harris's career at Cornell was marked by repeated controversy and dissension. At one stage there were, in fact, four separate departments of earth science at the University, one under Heinrich Ries in economic geology, one under A.C. Gill in mineralogy and petrography, one under R.S. Tarr in physical geography and dynamic geology, and one under Harris in paleontology. The total complement at the time was four professors, each with his own department, and each tending to communicate with the others only by letter. Except with Gill, Harris's relations with his colleagues were rarely harmonious. Yet his association with Cornell spanned a period of forty years.

It was, among other things, this sense of growing distrust between Harris and his colleagues, as well as arguments with the President of the University over a professional conflict of interest and his subsequent conduct, that was a major factor in the creation of the Paleontological Research Institution. This provides the fourth life: Harris the founder. Harris wanted to be sure that, once he retired from the University, his massive collections of Tertiary fossils would be appropriately preserved and curated. He also had a horror of the hazards of fire in McGraw Hall where they were originally housed and, in spite of repeated requests, the University proved unable to offer alternative fireproof accommodation. It is also clear that Harris was convinced that his own field of paleontology, and particularly his personal contributions to the science, were not adequately appreciated and recognized by his colleagues at Cornell.

For these reasons, he slowly developed the idea of establishing an institution, free-standing and wholly independent of Cornell, which would house his collections and provide a basis for continuing research and study. The germ of this idea had, in fact begun in 1895 when he started his own printing operation because he had had difficulty in finding copies of older paleontological publications and in getting his own work published in a timely manner. And so there was a fifth life: Harris the printer. He founded two journals, *Bulletins of American Paleontology* in 1895, and *Palaeontographica Americana* in 1916. He printed them on his own presses, and they continue to be published today. At first, much of the work that appeared in the journals was his own and that of his students, though in subsequent years the journals came to represent a wider range of authors and topics. It was around this that the Paleontological Research Institution gradually grew, housed first in a small cinderblock building that Harris constructed on the grounds of his home in University Heights, and later moved to the present PRI building on the west shore of Cayuga Lake. The provisional charter of PRI was approved by the New York State Board of Regents in 1933, a year before his retirement, and a permanent charter granted in 1936. While he was well into his eighties, Harris was still operating the presses of the institution he created.

Behind these five interwoven stories there stands the enigmatic and complex character of Harris himself. He was evidently a man of contradictory characteristics, kind and gentle on occasions, yet at other times mean and vindictive. Devoted to his students in general, he could be petty and hard with individuals. It was, in fact, a dispute with one of his most distinguished students, Carlotta Maury, that led to serious charges of a conflict of professional interest and a growing strain between himself and the Cornell administration. Devoted as he was to advanced students, he had little time for the general student body. Of the faculty members in the Geology Department, he was the only one who refused to participate in student advising. He even refused to teach laboratory sections. Yet Harris was loyal and caring toward his advanced students, who occupied responsible geological positions in many parts of the world. He was painstaking in assisting them in the study of material they had collected and the subsequent publication of their work, a wonderful mentor and a lasting friend for many. His later years were marked by loneliness and, perhaps, a growing measure of isolation. His wife, Clara, died two years before his retirement, after a marriage of forty-two years.

Looking back on his life, the remarkable institution that he created, the Paleontological Research Institution, owing its founding partly to pique and partly to fear of fire, is, perhaps, his best memorial. Its collection of type and illustrated specimens now numbers well over 30,000 and it houses more than 1.5 million other fossils and Recent specimens. Its publications continue to be consulted by paleontologists around the world.

William Brice brings enviable qualifications to writing this biography. A Cornell Ph. D. in geology, he is Professor of Geology at the University of Pittsburgh at Johnstown. He has taught summer courses at Cornell for more than twenty years. A historian of geology, he is also in one sense a descendant of Harris, for his interest in geology was stimulated in classes taught by the late Professor Johnnie Wells, who was himself one of Harris's students. Brice has also previously written the definitive history of geology at Cornell. All those interested in the history of paleontology will salute him on this latest publication.

GILBERT DENNISON HARRIS: A LIFE WITH FOSSILS

By

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ABSTRACT

Few people did more to unravel the mysteries of the early Tertiary geology of the United States than Gilbert D. Harris (1864–1952). In 1888, two years after graduating from Cornell University, he began his life-long study of the Tertiary, first as a member of the Arkansas Geological Survey tracing the Cretaceous-Tertiary boundary from Louisiana into Arkansas, and then with the U. S. Geological Survey and the Texas Survey. After travelling to Europe to study the Tertiary epochs there, he returned to Cornell as a faculty member in 1894.

Difficulties in locating copies of Timothy Abbott Conrad's early nineteenth century descriptions of Tertiary shells prompted Harris to start his own printing operation. He later founded two journals, *Bulletins of American Paleontology* (1895) and *Palæontographica Americana* (1916), which he printed on his own presses. Both of these journals continue to be published today by the Paleontological Research Institution, the organization Harris founded in 1932.

Harris believed that students learned best by doing actual geological investigations. From 1899–1909 he was involved with two undertakings that facilitated this belief and engaged students in actual geological research; (1) he was Geologist in Charge of the Louisiana Geological Survey, and (2) he conducted a summer field camp in the Helderberg area of New York. For the latter, he supplied boats for transportation in which the students travelled to the camp and from which they did geological field work along canals, lakes, and rivers. Using his boats, Harris and his students made at least four trips from Ithaca to the Southern Coastal Plain collecting fossils and studying the geology they passed at five miles per hour.

Gilbert Dennison Harris, paleontologist, teacher, and printer, through his students, his journals, his own research, and the Institution that he founded, made a lasting mark on the field of paleontology.

AUTHOR'S NOTES AND ACKNOWLEDGMENTS

My first encounter with G. D. Harris came when I began my graduate studies at Cornell University in 1967. At that time the Department of Geological Sciences was housed in McGraw Hall, where it had been in Harris' time, and there were many photographs of former faculty on the office walls. I distinctly remember seeing a picture of a small, gray-haired man bending over a machine. That photograph turned out to be of Harris at the age of 85 working on his printing press (Plate 14). As I started my 30 year association with the Department of Geological Sciences, I took classes from two of Harris' former students, Drs. Storrs Cole and John Wells, not realizing at the time how much of my life would be entwined with the Cornell department and its faculty. In 1976 I began teaching the summer geology classes at Cornell and the summer of 1995 marked my 20th year at this endeavor. Each time I used a fossil for my classes, I was reminded of Harris via Cole and Wells. In 1981 I was asked to prepare a history of the department for the opening of their new quarters, Snee Hall, in 1984. Once again I came in contact with Harris and his contribution as I traced the department's long and distinguished record (Brice, 1989).

As part of the Paleontological Research Institution (PRI) 61st anniversary celebration and reunion held in August of 1993, while dressed in a costume appropriate for the time of early geologic exploration, I presented a brief description of the life of G. D. Harris and the founding of PRI. The following year, 1994, one year before the 100th anniversary of the *Bulletins of American Paleontology*, I was writing a short paper on Harris' field camp in the Helderbergs (Brice, 1994a, 1995), and the subject of a Harris biography came into a conversation with Dr. Warren Allmon, Director of PRI. Suddenly the short paper grew into what you have before you; a tribute to and celebration of the life and work of Gilbert D. Harris to be published in observance of the 100th year of the journal which he founded in 1895.

No work such as this can be created in isolation, and I wish to thank and acknowledge the assistance and support of several people: Warren Allmon, Director, Paleontological Research Institution, who suggested the original idea and who has served as editor and proofreader; the staff at PRI, who were very helpful in locating various items for me; Gould P. Colman and the staff in the Rare and Manuscripts Department, Kroch Library, Cornell University, who assisted me with archive material; the Department of Geological Sciences at Cornell University for allowing me access to their historical records and their permission to use some of the material; Nancy Brunberg, Administrative Assistant, Division of Natural Sciences, University of Pittsburgh at Johnstown, for typing a portion of the manuscript, and, lastly, I acknowledge the support of my wife, Heather, for her critical reading of the draft, and for living through yet another manuscript. All of these people served to greatly improve the final product, but I bear sole responsibility for any errors or omissions that still exist.

Ithaca, New York August 1995

CHAPTER 1. "ITEMS HERETOFORE BUT VAGUELY KNOWN"

In 1952 a small, gray haired gentleman died at his home on Kelvin Place in Ithaca, New York, just a short walk from Cornell University where he had spent more than half his life. As he had been a very active man, far more active than many, during the last few months of his life it was heart-wrenching to all who knew and loved him to watch a debilitating illness slowly sap his strength and vitality. But on the 4th of December, two months and two days past his 88th birthday, Gilbert Dennison Harris, who began his life during the American Civil War, breathed his last. He and his wife had only one daughter, but through his teaching he left many "children" who carried on his legacy.

EARLY LIFE AND FAMILY

Gilbert Dennison Harris was born about three miles from Jamestown, New York on October 2, 1864. As he liked to say, he came from "strong English stock" (Anonymous, 1934), for his family came originally from England. The Harris family Bible (Lopus and Ingham, 1977) indicates that an ancestor, Walter Harris, died in England December 6, 1654, followed by Gabriel Harris (no information) and William Harris (died in London). The family appears to have emigrated to the British Colonies in the early 1700s, for one Samuel Harris, born March 5, 1697, died at Fort Edwards, New York in 1758. His son, Job (died 1814), moved to Connecticut where his son John was born in Reston April 22, 1766. As a teenager John served as a private in the Revolutionary Army (Downs and Headley 1921, p. 466–467), and then returned to live in Vermont where Gilbert's grandfather, Jonathan Harris (died Portland, May 13, 1877), was born in Halifax[2]. Jonathan married Lucy Miller and the couple raised their seven children in the Halifax and Bennington area of Vermont. Of the three boys and four girls, Gilbert D. Harris' father, Francis E. Harris, was the third son. The second son in this family, who was killed in the Civil War Battle of the Wilderness, also carried the name Gilbert, a name which Francis bestowed on his second son.

Francis E.[3] Harris was born in Marlboro, Vermont, November 29, 1830. He had little opportunity for formal education, something he regretted all his life, and he made certain that would not happen to his children. Francis Harris' mother died when he was young and his father remarried to one Jane Bruce of Bennington, Vermont; this union produced four step-siblings for Francis. At the age of eleven, Francis was hired out by his father to local farmers. Few in the family took much interest in the young motherless boy, except to get all the work out of him they could. But Francis was bright and resourceful and by the age of 17 he was engaged in his own contracting business and employing men much older than himself.

In 1852 Francis followed his older brothers Oscar and Gilbert and several sisters to Chautauqua County, New York and settled near Jamestown. At first he worked as a carpenter and builder, but after his marriage in Salem, March 29th, 1856, to Lydia Helen Crandall he moved to a farm in the town of Ellicott.[4] Lydia Crandall was born in Kinderhook, New York, February 21, 1832 and was only four years old when her mother and father, Stephen and Christina (Benjamin) Crandall travelled with their nine children from Albany to Buffalo on the Erie Canal, a journey that took two weeks to complete. Eventually the Crandall family settled in the Jamestown area (Downs and Headley, 1921).

Francis and Lydia Harris were the parents of six children, four girls and two boys (Downs and Headley, 1921; Lopus and Ingham, 1977); Cora Ethel (b. Randolph, New York, April 6, 1857; d. Falconer, New York, February 22, 1946), Ida Christiana (b. Randolph, New York, November 18, 1858; d. Jamestown, New York, August 15, 1919), Rollin Arthur (b. Randolph, New York, April 18, 1863; d. Washington, D.C. January 20, 1918), Gilbert Dennison (b. Ellicott, New York, October 2, 1864; d. Ithaca, New York, December 15, 1952), Jennie May (b. Ellicott, New York, May 5, 1870; d. Ellicott, New York, March 17, 1872), and Floy Bell (b. Ellicott, New York, February 11, 1875; d. Falconer, New York, October 13, 1968).[5]

---

[2] Jonathan Harris' birth date in the copy of the family Bible is illegible, but appears to be June 4, 1790 or 1796 (Lopus and Ingham, 1977).

[3] The E. appears to be for Eugene because the son of his daughter, Ida Harris Petersen, was named Francis Eugene Petersen (Lopus and Ingham, 1977).

[4] A map of Ellicott in 1881 shows F. E. Harris owning two pieces of land, lot 112a, section 10; and lot 51a, section 10 (Anonymous, 1881). This reference is in the private collection of Mr. Michael Anzalone, Chautauqua, NY, and I am indebted to him for the loan.

Francis and Lydia Harris made certain their children had an opportunity to gain an education, and with the exception of Jennie May (who died in infancy) and Ida, all of them attended college. Three of them, Rollin (Ph.B. '85, Ph.D. '88), Gilbert (Ph.B. '86), and Floy (A.B. '97), graduated from Cornell University, and Cora graduated from Fredonia State Normal School (now SUNY-Fredonia). After graduation Cora taught for several years and produced a volume of children's stories entitled, "Half a Hundred Stories" (Downs and Headley, 1921). Floy attended Cornell from 1894–1898, receiving the A.B. degree in 1897.[6] Downs and Headly (1921) indicate she studied Romance Languages and taught in Upstate New York, New Jersey, and California[7] before returning to spend part of her career as a teacher in New York City. In 1914 she returned to the Jamestown area and spent the rest of her days in the small town of Falconer, not too far from the old family farm. Gilbert's older brother, Rollin Arthur Harris, received his Ph.D. in mathematics from Cornell in 1888[8] and was a Fellow in Mathematics at Clark University in Worcester, Massachusetts until 1890 when he joined the Tidal Division of the United States Coast and Geodetic Survey. His position was "Mathematician" and he was to do mathematical calculations; in other words, he served as a "computer" before such work was taken over by machines. He amassed tidal information from various sources and devised methods of reducing these data into a useful form. His work eventually appeared as the "Manual of Tides" which was published in the Superintendent's Reports through 1907. The entire "Manual" encompasses over 1200 pages and received praise from mathematicians and scientists from all over the world. A similar monograph,"Arctic Tides", followed in 1911. Rollin was active in professional societies and presented papers at various meetings (R. Harris, 1898a, 1898b)[9]. Rollin would frequently join his brother, Gilbert, when he and his students were on one of their boat trips to the Chesapeake Bay region, and also worked with him on part of the Louisiana Geological Survey activities (R. Harris, 1902). Rollin eventually became Chief Mathematician and continued working with the Coast and Geodetic Survey until his untimely death from heart disease in 1918.

Gilbert spent his early childhood on a farm near Jamesville at what was known as "Peck Settlement" (Lopus and Ingham, 1977 p. 92) and he ". . . walked three miles to attend the nearest high school . . ."[10] (Anonymous, 1934) which was then called the Jamesville Union School and Collegiate Institute (Palmer, 1953c). Two older sisters and an older brother preceded him at the high school and as Rollin went on to be a teacher in the local area for a short time after his high school graduation and he then received a scholarship to attend Cornell University, young Gilbert had quite a family legacy to continue. As a young boy, he showed a keen interest in and talent for science and mathematics, and he had quite a talent for drawing; a skill that was to be of great benefit to him later. Based upon what must be his first field notebook, Harris was making systematic recordings of observations and information about animals and birds at the age of 10. Several of the entries noted both the generic and specific names along with the common name:

> "RABBIT (LEPUS CUNICULUS) ITS BODY IS 16 INCHES TAIL 2 IT IS ALSO CALLED CONY RABBITS DO NOT DIG AS LONG HOLES AS THE WOODCHUCK ITS YOUNG ARE BROUGHT FORTH IN JUNE 4 OR 6 IN A LITTER Rabbits are sometimes used for food" (p. 9) [Capital letters as in the original; no punctuation in original.]

> "(PROCYON LOTOR) RACCOON Its body is 22 1/2 inches long tail 8 1/4 These animals frequent brooks which abound in minnows and crabs He is a savage fighter when

---

[5] Florence is in parentheses next to Floy in the family Bible and Florence is on the gravestone in Allen Cemetery, Poland, New York. Also, in a letter written in 1953 by Harris' youngest sister to Katherine Palmer, then Director of the Paleontological Research Institution, was signed "Florence B. Harris." In this letter she was thanking Dr. Palmer for sending her brother's memorial. Therefore, she must have used "Florence" in professional and formal settings, but within the family she was "Floy." (Florence B. Harris to Katherine V. W. Palmer, November 2, 1953. HA-PRI, Ithaca, NY).

[6] Listing for Florence Belle Harris of Jamestown in *The Ten-year Book of Cornell University, IV, 1868–1908* (Anonymous, 1908, p. 268), and in Hewett (1905, Vol. IV, P. 274).

[7] From a postcard she sent her brother, Floy Harris was teaching in California in 1913. HA-PRI, Ithaca, NY.

[8] Listing for Rollin Harris; attended 1882–85, 1886–88; Ph.B. 1885, Ph.D. 1888, in *The Ten-year Book of Cornell University, IV, 1868–1908* (Anonymous, 1908. p. 268; also Anonymous, 1915b).

[9] Because there will be many quoted references for Gilbert D. Harris, those will be cited hereafter as just "Harris." For citations for any other Harris, either first names or initials will be added.

[10] According to Palmer (1953c), the distance was four miles each way. In either case, in the winter it must have seemed like far more than this for young Rollin and Gilbert.

> attacted [*sic*] by dogs He inhabits the wooded districts of the U. S. A." (p.21)[11]

Many of the pages are covered with very life-like sketches of the creatures being described; field mice, different kinds of fish, birds, etc. Except for the fish, most of the animals are portrayed in some living activity. In the last section of the notebook are systematic records of each animal he saw and the date on which he saw it. He also recorded the dates on which he saw particular species of migrating birds in the spring as they returned to the area:

"1878

Robin	March	1,	1878
Blue Bird	"	7,	"
Hawks	"	7,	"
Flicker	"	15,	" " (p. 56)[12]

Even though Harris was growing up among some of the finest Devonian fossil beds in the country, these fossils apparently escaped his notice at the time he was making these early observations, for not one entry mentions seeing a fossil. He must have been too busy discovering the world of the living to cast his attention toward animals no longer with us; that was to come later.

After completing high school, Gilbert followed his brother Rollin's example and won a scholarship to attend Cornell University. First however, also like his brother before him, Gilbert taught for a brief time in a small country school, the Dry Brook District School, near his home; teaching by day and trying to keep warm in an attic room with only a kerosene lamp for heat (Palmer, 1953c). Rollin was still a student at Cornell when Gilbert entered in 1883.

Among Gilbert's classmates in geology at Cornell were Charles David White, who later became Director of the United States Geological Survey (U.S.G.S.), and Robert T. Hill, later of the Texas Geological Survey and U.S.G.S. It has been reported that another member of the Class of '86 was David Starr Jordan, later a famous ichthyologist and the first President of Stanford University[13] (Brice, 1989). But actually Jordan had graduated with his M.S. (he skipped the B.S.) in 1872 and was a classmate of another accomplished geologist, John C. Branner. The confusion of Jordan with Harris' class of 1886 apparently arose because Jordan received an honorary LL.D. that year (Jordan, 1922). So technically he was part of the class of 1886, but not really a classmate of Harris. According to his autobiography (Jordan, 1922) however, Jordan did have an indirect connection to the Geology Department, for he helped dig the foundation of McGraw Hall which was the home of the Geology Department for almost 100 years.

According to Palmer (1953c), Harris came to Cornell undecided on a course of study, except that he knew it would be in science[14]. The purchase of James D. Dana's *Manual of Geology* . . . (Dana, 1880) helped him make up his mind (Palmer, 1953a; and personal communication, July 28, 1982). Little did he realize that in a few short years he would assist Dana in preparing the 4th Edition (1895) of the very book which kindled the flames of geological fire in him.

COLLEGE DAYS AT CORNELL

At the time Harris came to Cornell, the Department of Geology was headed by Samuel Gardner Williams.[15] It was under Professor Williams, who is remembered more as a teacher than as a scholar, that Harris began his geological work. Many years later Harris had the opportunity to examine some of the same areas his old professor had described and remarked on the durability and significance of the earlier work:

> ". . . it may be stated that a similar study was undertaken by Prof. S. G. Williams and his results were published in the *American Journal of Science*, 1886, vol. 31, p. 139–145. Subsequent investigations have shown that this author was scarcely warranted in his general conclusions regarding the age and proper correlation of the great mass of limestone between the gypsum beds and Oriskany in central New York, for he believed them to be locally modified Helderbergian deposits, and hence above the Manlius series. But this much must be said in his behalf, *viz.* that he alone has seemed to grasp the true stratigraphic relations of the various deposits about Union Springs, and he alone has emphasized the importance of the Oriskany Falls section in elucidation of Manlius and Helderbergian stratigraphy." (Harris 1904, p. 55)

Even later, in his Annual Report for 1927–28, Harris had even stronger language concerning S. G. Williams' ability as a geologist:

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[11] Small field notebook with front cover missing. No name visible, but it was found among items known to belong to G. D. Harris and the handwriting looks similar to items written by Harris. Earliest date in the small notebook is May 8, 1875. HA-PRI, Ithaca, NY.

[12] Field notebook of G. D. Harris, 1875–1878. HA-PRI, Ithaca, NY.

[13] Class list of the Class of 1886 compiled for the 35th reunion. HA-PRI, Ithaca, NY.

[14] Statistics for the Class of '86 list Harris as "21 years old, 163 pounds, 5'6 1/2" tall, 7 1/4 hat size, and his future occupation is listed as "undecided."

[15] Refer to Brice (1989) for further details on the Cornell Geology Department.

> "Here it may be remarked that the good sense of Hartt[16] made Brazilian geologic investigations possible and put us in the advanced ranks of geologic departments, then the reign of S. G. Williams put us below zero."[17]

In December of 1885, S. G. Williams left the Geology Department to become the first Professor of Science and the Art of Teaching at Cornell,[18] and Henry Shaler Williams, one of Ithaca's native sons, took control of the Geology Department just as Harris was completing his undergraduate work. Harris received the Bachelor of Philosophy in 1886 and was elected to Phi Beta Kappa (1885) and Sigma Xi (1887)[19] (Downs and Headley, 1921).

This new Williams was a better geologist than his predecessor, and the change in department leadership may have led to Harris' decision to remain at Cornell for another year of study. In this he was, again, following the lead of his brother, Rollin, who was continuing his studies at Cornell as well.

H. S. Williams had graduated from Yale where he studied under James D. Dana, and had been at Cornell since 1879 (Brice, 1989). Working with Williams at that time was Charles S. Prosser (B.S. '83, M.S. '86, Ph.D. '07)[20], who served as Williams' assistant in the Devonian Laboratory at Cornell. Williams directed the laboratory for the U.S.G.S. while he taught half-time. As Ithaca is located in one of the world's greatest exposures of Devonian age rocks, it was fitting that the U.S.G.S. Devonian research effort be situated there. Through very careful and detailed study of these Devonian rocks, Williams was able to show that there were exceptions to a widely held belief of the time that a distinct set of fossils characterizes each and every geological formation. He found, for example, that the fauna of the Hamilton Formation was repeated in the Ithaca Formation, which at that time was an important discovery.

Surrounded as he was by H. S. Williams and his Devonian work at Cornell and the rich Devonian material found in the rocks around Ithaca, it is not surprising that Harris had not yet turned much attention to the Tertiary. Later, after he focused on the Tertiary material, he did not totally turn his back on the Devonian, for he published a wonderful series of little handbooks on the fossils and geology of the Cayuga Lake area (*e.g.*, Harris, 1899a).

In his memorial, Cleland (1918), described H. S. Williams as an "investigator" (a "researcher" in today's language), "rather than a teacher." Williams felt that the key to good paleontological work lay in careful and patient collecting (Cleland, 1918). This was a lesson that all of Williams' students learned well. Those students included H. E. Gregory, Stuart Weller, Charles Prosser, Charles David White, and, of course, Gilbert D. Harris. And it was upon the H. S. Williams model of helping students search for answers by careful analysis of the facts available that Harris built his own teaching techniques. According to one of his students, Harris was at his best when sitting around a table with a small group of students working on a set of fossils (Plates 9, 10).[21] More will be said about his teaching and his students in a later section.

GEOLOGICAL SURVEY ACTIVITY

After the extra year at Cornell, Harris joined the Geological Survey of Arkansas in 1888 (Palmer, 1953a, 1953b, 1953c; Olsson, 1954). The choice of positions may have been influenced by the fact that the head of the Arkansas Survey was another Cornellian, John C. Branner. Branner had been a student of Charles Frederic Hartt in the early days of Cornell and had worked with Hartt on the first Imperial Geological Survey of Brazil (Brice 1989; Figueirôa, 1994). Branner's assistant, Frederick W. Simonds, was another Cornell graduate who had studied with Hartt (Heroy, 1942; Brice, 1989).

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[16] Charles Frederic Hartt (1840–1878), first professor of geology at Cornell, 1868–1875 (Brice, 1989).

[17] Annual Report by G. D. Harris to Heinrich Ries, May 8, 1924, p. 2. Heinrich Ries Papers, 14/1/5/691, Box 2, File 2-4, Rare and Manuscripts Collections, Kroch Library, Cornell University, Ithaca, New York 14853 (hereafter abbreviated as RMC-KL, Cornell).

[18] *Ithaca Daily Journal*, May 21, 1900, p. 3.

[19] "I quite approve of the idea of your getting the **Φ β K** and **Σ X** keys." Clara Stoneman to Gilbert Harris, September 20, 1890. These personal letters were discovered at a garage sale near Ithaca, NY in 1984. They were being sold for the old postage stamps on the envelopes, but I recognized the name of the addressee, Gilbert Harris, and purchased them for $5.00. They are now housed in the Harris Archives (HA-PRI, Ithaca, NY). These letters are hereafter referred to as "Private collection, WRB, now at HA-PRI,Ithaca, NY." The awards and dates are also listed in a letter to Cornell President Schurman by Gilbert D. Harris, May 1907, HA-PRI, Ithaca, NY.

[20] Charles Smith Prosser (1860–1916). From 1888 to 1892 he served as assiant paleontologist in the Paleobotany Division of the United States Geological Survey at the time Harris was working there in the late 1880s. Later Prosser was a Professor of Geology at Washburn College in Topeka, Kansas, and spent most of his career at Ohio State University. (Cumings, 1916). There is an interesting twist of fate here, for Prosser, one of his teachers while Harris was a graduate student, later returned to Cornell to do his Ph.D. (1907) under Harris' direction. He apparently returned to Cornell in 1900; "Prof. Prosser, of Columbus, Ohio, takes his Ph.D. in the department this spring." *Annual Report of the Department of Paleontology and Stratigraphic Geology; 1899–1900* by G. D. Harris, p. 5. HA-PRI, Ithaca, NY.

[21] Katherine Palmer, personal communication, July 28, 1982.

When Harris began working in Arkansas, the Geological Survey under the leadership of Branner had only been in operation about a year (Branner and Coville, 1891). According to Olsson (1954), it was on this first trip to Arkansas that Harris received his first good introduction to the Tertiary strata of the southern United States. Unless Harris worked at two different locations during that time, however, he could not have been working on Tertiary rocks on this first trip to Arkansas. He was assigned to work with Frederic Simonds in Washington County, and the geologic map for that county which is part of the published report (Harris, 1891b; Simonds, 1891) has no rocks mapped on it younger than Carboniferous; no Tertiary strata occur in the county. The work with the Tertiary-Cretaceous boundary thus did not come until his second trip to Arkansas in 1892:

> "The first part of September, 1892, was spent in reviewing work done along the Cretaceous-Tertiary boundary." (Harris, 1894b, p. 6).

Part of this initial work appeared in an Arkansas Survey report on the geology of Washington County. Harris prepared chapter 18, the portion for the Fayetteville-Huntsville area (Harris 1891b). It is interesting to note that in Branner's introduction to the publication, he listed a total of four people assisting Simonds with the work in Washington County, Harris and three others, but Harris was the only one to get his name on a chapter heading. That, plus the letter from Simonds quoted below, suggests that the work Harris did was of very high quality.

It seems, however, that Frederic Simonds, his supervisor and co-worker on his Arkansas project, was not totally pleased with the final publication of the work, and did not feel Harris received the recognition he deserved:

> "As you may already possibly know that Washington Co. Report [Simonds, 1891] is now out. It isn't so bad after all, but if I had it to do over again I would do a better job. I hardly think that as much credit is given you as ought to have been given. I gave you more but in 'passing thro' [*sic*] the press' all that was eliminated. I was very particular in the matter myself and had your name on the map-proof which I sent back [from Austin, Texas] to Little Rock. But I did not see the page-proof and did not correct the errors until it was all printed. I speak of this at length for I don't want you to think me greedy."[22]

Although his work with the Arkansas Survey started with great promise, a severe illness brought it to a sudden halt almost before it began. According to Olsson (1954), it took Harris several years to recover fully. No mention is made in his memorials (Palmer, 1953a, 1953b, 1953c; Olsson 1954) as to the nature of the illness, but malaria seems quite likely for it was not uncommon at that time (see a letter from his sister quoted below), and recovery was not an easy process. Apparently another equally unknown incident, aside from the illness, must have happened while Harris was in Arkansas that could have ended his career early, for on a post card from his sister, Floy, in 1913, she wrote:

> "It was Prof. Seth [illegible] of Chicago Univ. who helped save your life in Arkansas I'll wager. How queer the two sisters should meet in S. Calif. to teach in the same H.S."[23]

There is some confusion as to just when Harris joined the United States Geological Survey (U.S.G.S.). Palmer (1953a) indicates it was in 1888, but in other memorials, she (1953b,c) gives the date as 1889, a date supported by Downs and Headley (1921). Olsson (1954), however, states that it was in 1890 that Harris started working with William Healy Dall; and in this Olsson is almost correct. The confusion results because, at first, Harris was with the Paleozoic Division of the Survey, no doubt on the strength of being a student of, and having a recommendation from, H. S. Williams. In fact, it appears he was actually working under H. S. Williams, for in C. D. Walcott's report for the "Paleozoic Division of Invertebrate Paleontology" in the Eighth Annual Report of the Survey, is this small statement in the section describing Williams' activity for the year ending June 30, 1887:

> "Mr. C. S. Prosser assisted in the field work and Mr. S. D. Harris added another station in Chautauqua county, N.Y. to obtain data on the Upper Devonian." (Powell, 1889, p. 174–175).

Mr. "S." D. Harris must be "G." D. Harris, especially given the Chautauqua county reference. Also, the timing fits what has been reported by others mentioned above.

It was after this initial work in the Paleozoic Division of the U. S. G. S. that Harris worked with Dall at the Smithsonian, but both men worked for the U.S.G.S. Dall's report for his Division for the year ending June 30, 1889 in the Tenth Annual U.S.G.S. Report said this:

> ". . . and, subsequently, Mr. Gilbert D. Harris . . . [was] temporarily employed for some months." (Powell, 1890, p. 166).

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[22] Frederic Simonds to Gilbert D. Harris, September 17, 1891. HA-PRI, Ithaca, NY.

[23] Floy Harris to Gilbert D. Harris, September 1, 1913. HA-PRI, Ithaca, NY.

From Dall's statement, it seems that Harris was being engaged by Dall, at least temporarily, as early as 1889.[24] At that time Dall was in the early stages of his work on the Tertiary mollusks of Florida and the southern Coastal Plain, and soon after both men would become involved with a large Tertiary correlation project. It was during the association with Dall that Harris really became immersed in the study of the Tertiary that was to occupy him for the rest of his days.

WASHINGTON, D.C. AND SEPARATION FROM HIS FAMILY

Although this was not the first time Harris had been away from home, those first few months in Washington, D. C. must have been difficult for him. Later Harris would have the companionship of his brother, Rollin, who began working there with the Coast and Geodetic Survey in July 1890.[25] In the meantime, there was a steady stream of letters from his family in the Jamestown area keeping him apprised of family affairs and the deteriorating condition of his father. In addition, sometime in 1889 or 1890, Harris became engaged to Clara Stoneman who was living at Harmony, near Jamestown. So young Gilbert, now age 24, was separated from his fiancé and his family at a time when much was happening. His father's health was failing, his mother was not well either, and they were apparently trying to sell the family farm.[26]

In March of 1890 Harris' sister Floy wrote to him about their father:

> "Pa walked to town and back Friday, and did not seem to notice it. I weigh about a pound more than Ma, but she is getting better. . . . I do not know whether Cora [oldest sister and the first born child] will teach the summer term, if she does I think I shall go and study Grammar, Physiology, Physical Geography, and perhaps Algebra. Then there will be a number of weeks to take music lessons. . . . I do not see when I am going to learn Stenography and Type-writing [*sic*]. I think that if I had a typewriter I could practice considerable [*sic*] on it. The younger I could begin the better, it seems to me, but Pa keeps putting it off to some future time . . . Nellie Drummy and I went to a [movie] matinee a few weeks ago. I never went to one before. . . ."[27]

Whereas his brother, Rollin, who was completing his studies at Clark University, could get home that summer, Gilbert's geological work required him to spend the summer in the field. In May his sister Ida noted this fact and passed along some family news:

> "I think ma's [*sic*] health is improving. She grows fleshy a little and has a good appetite. Sometimes pa [*sic*] feels a little blue because land does not sell higher, though he rather thinks he can sell eight acres of the west end of this farm for a thousand dollars, to a Swede man. . . . Rollin writes he thinks to come home about the tenth of June. I am afraid you will not be at home much this summer if your are going in the field to work."[28]

A few days later, Harris received a note from his oldest sister, Cora:

> "Ma feels so strong lately that she has to go and tear up the earth in certain places around the currant bushes. Ida's being home enables her to do about as she pleases and I guess she enjoys herself very well now. I think pa [*sic*] feels a little disappointed in not selling more of his farm this spring and does not feel as much interested in anything as it is necessary to be for enjoyment. . . . I have not been feeling very well lately I rather believe it is malaria for one thing."[29]

A few weeks later while Harris was doing field work around Yorktown, his father's condition took a turn for the worse. First from sister Ida and then from Cora:

> "I have not very pleasant news to tell, but presume you had rather receive it than no news. Pa has been running down for several weeks, and Saturday night he was take [*sic*] vomiting and has been sick since just as usual. We sent for Dr. Scott this morning but it is now quite late in the afternoon and he has not come yet. . . . Hoping you are enjoying yourself in Yorktown . . ."[30]
>
> "Father is yet sick in bed. He has been up very little for over a week. The doctor thought yesterday that he was a little better. Dr. Scott the one employed now calls it ulceration of the stomach, says he thinks that is what has ailed him for 20 years. He thinks however that it will pass away this time without breaking. I tended him last night. He was in considerable pain. The Dr. thinks the particular

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[24] Harris was definitely working at the Smithsonian Institution by June, 1890, because a letter from his Mother mentions his work there. (Lydia Harris to Gilbert Harris, June 29, 1890. Private collection, WRB, now at HA-PRI, Ithaca, NY.)

[25] ". . . that Rollin will take up his abode in Washington." A reference in a letter from Clara Stoneman to Gilbert Harris, July 6, 1890. Private collection, WRB, now at HA-PRI, Ithaca, NY.

[26] An interesting fact that has emerged from a study of the letters written to Harris while he was in Washington, D. C. is the quality of the mail service in 1890–92. It is not uncommon to see on the envelopes, for example, a postmark for Jamestown with the date March 4 at midnight and another on the back showing a Washington, D. C. postmark for March 5 at 10:30 AM. Apparently one and two day service between Jamestown and Washington, D. C. was common in 1890.

[27] Floy Harris to Gilbert D. Harris, March 2, 1890. Private collection, WRB, now at HA-PRI, Ithaca, NY.

[28] Ida Harris to Gilbert Harris, May 4, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[29] Cora Harris to Gilbert Harris, May 11, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[30] Ida Harris to Gilbert Harris, June 10, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

> place of disease is in the pyloric canal a very delicate place."[31]

As if all this was not enough, the family was full of mixed emotions about Rollin, who was completing his work at Clark University, because he had no "position" before him, and he had been married on June 13, 1890. Even that event had not been without its problems:

> "We rather cotted [*sic*] on Rollin's coming home to help care for him [their father], but what do you suppose, I was never more surprised in my life. There was a dreadful rain here Thursday but about one o'clock Rollin came with his feet wet having waded some large mud puddles on his way from town. He could hardly stop for dinner and could not change his socks so pressing was the business in getting to Uncle Rob's to tell Emily [Doty, Rollin's fiancé] that the wedding must be postponed until another day on account of his being delayed on the train. Well he harnessed up Bennie our new colt with some feelings of regret I suppose that the carriage was not repainted [Rollin had sent home several requests to have the carriage painted[32]] and took her [Emily] riding to the Burg for a preacher Elder Stone. On Friday afternoon Mr. Wright came over and invited us all there Friday eve [*sic*]. The knot was to be tied at half-past seven but Rollin didn't start from here until eight so we presume she [Emily] got a little fidgety. He [Rollin] put on one pair of pants and found a hole in them so he had to change and you know it generally takes him quite awhile to get ready. Thats [*sic*] the last we have seen or heard from him. He took the horse and carriage so we suppose they [are] riding around the country somewhere. R. [Rollin] says he intends to live over there and he'll have a nice room. He does not talk as though he had any position and we all think it is strange piece of business. None of us attended the wedding[.] we [*sic*] had a good excuse on account of pa's [*sic*] sickness. I did not want to go. I always trusted that he had sense enough not to marry till he at least had some place in the world and as it appears now I and the rest feel much disappointed. I should not think that she would want to marry under the circumstances."[33]

Gilbert heard this news from his mother as well. Like many mothers, his had a problem understanding that geological field work, especially in a coastal area, was not necessarily a vacation. Note that in these letters, and apparently always, his mother, Lydia Harris, wrote without formal sentences:

> "You have had quite a vacation the change will probably do you good even if your work was as hard as at the [Smithsonian] Institution. I think you are having a nice chance to see the country, and living in an atmosphere of intelligence you must feel that you are improving all the time. It was with a feeling of pride that I read the article you put in the Journal[34] a few weeks ago and how I did wish that Rollin could do something worthy of note. You must know how we all feel about his marrying in his circumstances. I have nothing against Emily only marrying under such circumstances, but we must hope for the best he is willing to work and pa [*sic*] thinks of getting him survaying [*sic*] instruments if he does not find any thing to do. . . . It is about haying time. I don't know how ours will be done here . . . the prospect is not very encouraging to farmers. Butter 12 cents a pound and [selling] slow at that we used to think if we had a package of butter it was the same as cash, but now they hardly want it at any price. I don't see how any one can pay for a farm if they run in debt much now days. . . . When do you think of coming home?"[35]

While all the problems at home were coming to him via the mails, Harris had prepared his first professional publication, a one page paper on the fossil gastropod genus *Terebellum* (Harris, 1890). Although the actual publication came a few months later, the dateline at the close of his paper is April 3, 1890.

By late July, one family concern had resolved itself. Rollin had a new position in Washington, but Francis Harris was not improving and Gilbert was not able to get home:

> "Pa is worse. The Dr. was here last evening and this morning. Pa vommits [*sic*] and is in considerable pain, but he rested some last night. Day before yesterday he walked down to Mrs. Wrample's and back, and he ate some steamed fish, perhaps he over did and made him worse . . . Ida and I milk the cows and do the rest of the chores when Ma does not get ahead of us. I have been wishing we lived in town so that I could go to school this fall without boarding up town at some strangers' house. . . . P.S. July 14, 1890- Pa had a very bad night, but he is more quite [*sic*] this morning. . . . Ma thinks Pa is a little better. The Dr. thinks that he is troubled with the Catarrh of the Stomach now more than the Ulceration of the Stomach."[36]
>
> "Pa is no better yet as far as we can tell and of course we know he must grow poorer and weaker. He has not left the bed-room [*sic*] for a week. He not even sits up to have his bed made. We three [sisters] take turns in lying on the lounge nights and do what little we can. More than half

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[31] Cora Harris to Gilbert Harris, June 15, 1890. private collection, WRB; now at HA-PRI, Ithaca, NY.

[32] Cora Harris to Gilbert Harris, May 11, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[33] Cora Harris to Gilbert Harris, June 15, 1890. private collection, WRB; now at HA-PRI, Ithaca, NY.

[34] The article referred to in the letter appears to be the professional paper he published in *The American Geologist* on the fossil gastropod genus *Terebellum* (Harris, 1890), for nothing written by Harris could be found in the *Jamestown Evening Journal* around this date. He evidently sent a pre-print of his paper to his mother.

[35] Lydia Harris to Gilbert Harris, June 29, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[36] Floy Harris to Gilbert Harris, July 13–14, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

> his nights in the past week have been spent in pain and restlessness. The doctor comes every day but seems to do little good as yet. We can do the work very well, that is I mean the caring for pa [*sic*]. Ma gets quite discouraged and nervous once in awhile [*sic*] but still she has a good appetite. Of course I keep hoping each day may find him a little better. Gene intended to do our haying but we hear he has been unwell with a lame side so we are looking for some-one [*sic*] else, . . . I do not worry about that any. I hope you will make us the visit you intended to this summer. Pa would not expect you to work in haying if you were here. Pa said to'day [*sic*], 'Of course if I grow worse and am liable to die it would best for him to come awhile [*sic*]' Of course we're always glad to see you, but you must time your visit when most convenient to you unless something happens to decide. . . . I think Rollin's getting a position has given pa [*sic*] a great peace of mind."[37]

Harris' Mother wrote to him on July 29th with what appeared to be some good news:

> "I think he [Harris' Father] is improving as fast as could be expected after a fast of two weeks he sits up part of the time and lies on the lounge the remainder of the day it seems good to him to get out of his bedroom again how long it will last we can't tell but hope a long time as I have not the strength to take care of him that I used to have and it makes one feel so bad to see another suffering with no power to help them he is now about the same as when Rollin left . . . I think Rollin could not have found a nicer girl [Emily Doty] any where [*sic*] and hope he will proove [*sic*] worthy of her. . . . It has been a very discouraging season for farmers the present our haying is not half done it rains so much of the time they can't work more than one day in a week some of the time so some of it will be poor quality. . . . Brother William [Harris' Uncle] died quite suddenly they called him to breakfast in the morning he felt as well as usual until he went to get up he felt suffocated and he grew worse until afternoon the same day he died they called it influenza the day before he was in his shop at work I suppose. . . . You did not tell me when you are coming home."[38]

Just 14 days after that letter was written, on August 12, 1890, Francis Harris died.[39]

CLARA STONEMAN AND GILBERT HARRIS

In the midst of the anxiety caused by his father's failing health, Harris had the joy of his engagement to Clara Stoneman. Judging by her surviving letters to him, the pair were deeply in love, and wrote to each other almost every week when they were separated; sometimes more often. In a letter to him on May 10th, 1890, she says:

> "Marian wants to know how I am going to stand it after I get to Washington, D. C. without a letter twice a week. I guess I can manage to stand it some way."[40]

In another letter after he had been home for a short visit, probably for his father's funeral, Clara wrote:

> "When ever I close a letter I always wonder if you understand how much I mean it to mean when I say I am,
> Yours truly, Clara"[41]

There is little record of Clara's early life or of her family. The survey maps of 1881 (Anonymous, 1881. p. 116–117) show that a "B. Stoneman" owned property on Chautauqua Lake, New York (adjacent lots 108a and 55a, section 3, and lot 233a in section 22) near the town of Lakewood, not too far from Jamestown. One "C. Stoneman" (possibly Clara's uncle) owned lot 100a, section 16. Some of these Stoneman properties must have had magnificent pine trees on them, for it is said that Gilbert was attracted to Clara as much by the primeval pines on the family property as by Clara's beauty (Palmer, 1953c). Many years later some of the timber on the old Stoneman property was used in building the Harris home at 126 Kelvin Place in Ithaca, New York. Even though some of Clara's letters came from Harmony, New York and she speaks of their home there, the 1881 map of Harmony does not list any property owned by the Stoneman family. The family either rented a house there or purchased it after 1881.[42]

From information in several letters, Clara Stoneman appears to have had at least one and possibly four sisters. In one letter to Gilbert she said, ". . . if the girls will keep still long enough I will try and write a few words more."[43]; from this We might conclude that Clara was the oldest. There is one envelope, postmarked at Gettysburg, Pennsylvania on June 25th, 1918, addressed to "Miss Bertha Stoneman, Ph.D., in care Prof. Harris, Cornell Heights, Ithaca, N.Y.", but forwarded to "212 W. Falconer St., Falconer, NY." From another letter it appears that Bertha attended

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[37] Floy Harris to Gilbert Harris, July 20, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[38] Lydia Harris to Gilbert Harris, July 29, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[39] Funeral services were held on Wednesday, August 13, 1890, at the Harris home on Buffalo Street. He was buried at the family plot in Allen Cemetery. (Funeral notice, page 4, *Jamestown Evening Journal*, Friday, August 15, 1890.

[40] Clara Stoneman to Gilbert Harris, May 10, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[41] Clara Stoneman to Gilbert Harris, September 27, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[42] The letters from Clara Stoneman begin on May 3rd, 1890 and continue in groups until Jan 1892. I assume the gaps are when they were together either in Washington, D. C. or in Jamestown.

[43] Clara Stoneman to Gilbert Harris, September 27, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

Cornell for some of her college work, for from Bertha, ". . . [Aunt Kate] wanted to learn the Cornell pronunciation [of Latin] . . ."[44] Alumni records show that Bertha Stoneman did, indeed, attend Cornell from 1888–1889 and again from 1891–1896. She completed two degrees, the Bachelor of Philosophy (Ph.B.) in 1894 and the Doctor of Science (D.Sc., not a Ph.D.) in 1896 (Anonymous 1908, p. 507; 1922, p. 312; Hewett, 1905, v. IV, p. 523). Her doctorate was among the earliest earned by a woman at Cornell, for the very first one was awarded in 1895 (Conable, 1977). These same University records indicate that in the early part of this century Bertha Stoneman was a lecturer at Huguenot College in Cape Wellington Province, South Africa[45] about the same time one of Harris' former students, Carlotta Maury, was also a lecturer there; there is no record of any communication between the two, but Bertha Stoneman did stay in South Africa for many years. In 1932 Harris wrote to a former student:

> "We are expecting Mrs [*sic*] H.'s [*sic*] sister from S. Africa in Feb. but fear she will be so wedded to the dark continent that she will be returning after a few months"[46]

In addition to mentioning Bertha in her letters, Clara refers to a Marian, who was probably also a sister: ". . . but Basie and Marian soon came up [to her room] . . ."[47] In one letter she speaks of how cold her feet are as she writes, but she will soon go to bed and ". . . make Basie get them warm."[48] Thus, Basie must have been a sister or at least a cousin. But Basie may be the familiar name of Bertha and not a separate person. It seems she had no brothers, for in a letter to Gilbert after describing some errands for her father she said:

> "You see I have to be a son as well as a daughter in this family. I generally manage to find something to do in the house but when I can't I can take a horse to be shod . . ."[49]

Both families were engaged in farming, but the Stonemans appear to have been more landowners than actually working farmers:

> "As for the thrashers they have not made their appearance yet. They will in due time however."[50]

In several letters she speaks of "hired hands" and "the girl who works for us", so her family must have been reasonably well off financially. After 1881, the family seems to have had homes in Harmony and near Lakewood, both of which are near Jamestown and Chatauqua Lake:

> ". . . when I went away from home [in Harmony] I had to go to Lakewood. . . . Some weeks it would be much nicer if I had my mail come to Lakewood . . ."[51]

In one letter Clara speaks of "hard times", but how much is real and how much is a young girl's attempt at humor, is difficult to say:

> "Yesterday and to day [*sic*] we entertained the thrashers. We did not have a very hard time of it. They did not get here until 4 o'clock yesterday and were through by ten this morning. We had only 180 bu. of oats,-a very small quantity in comparison with the [illegible] bushels some years. I think we will have to shut up the house this winter and take old Jim[52] and the rest of the horses and go 'cousining'. We have hardly enough potatoes to last until spring. It looks as though we are on the verge of starvation! If the wolf comes to the door we will have shoot him and eat him. But I won't cross that bridge until I come to it."[53]

From what Clara wrote Gilbert, her grandmother Stoneman must have been quite a personality for her time:

> "Aunt R.[ebecca] says that Grandmother Stoneman was the first woman in this county who dared to drive her own horse to J-[amestown] and other places without a man along. In those days it was considered a very disgraceful thing to do so, but my grandmother did not mind what the people thought about her and continued to do her own driving. And now I suppose her spirit has cropped out in me."[54]

As with most families of the time, the Stonemans and the Harrises kept horses both for work and transportation. In family letters, along with the sad news that Gilbert's father was ill and not improving, there was news about a sick horse as well:

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[44] Clara Stoneman to Gilbert Harris, July 20, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[45] This is confirmed by a letter from Harris to C. H. Stoelting, February 23, 1914, in which he requests an item, ". . . for my sister-in-law Dr. B. Stoneman, Huguenot College . . ."

[46] Gilbert D. Harris to Floyd Hodson, "Dear Hodsoni", December 29, 1932. HA-PRI, Ithaca, NY.

[47] Clara Stoneman to Gilbert Harris, September 27, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[48] Clara Stoneman to Gilbert Harris, May 17, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[49] Clara Stoneman to Gilbert Harris, September 24, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[50] Clara Stoneman to Gilbert Harris, September 27, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[51] Clara Stoneman to Gilbert Harris, October 12, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[52] Given the nature of the sentence the "Jim" must be a horse, but according to another letter she wrote to Gilbert Harris on November 8, 1890, there was a hired hand on the Stoneman farm named Jim as well.

[53] Clara Stoneman to Gilbert Harris, October 2, 1890, Private collection, WRB; now at HA-PRI, Ithaca, NY.

[54] Clara Stoneman to Gilbert Harris, October 19, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

> "... we have been quite excited over our sick colt for a week past we had to dose him with powders and drops the same as a person every hour the horse Dr. came five times to see him he is improving very fast ..."[55]

> "Our colt seems to fed [*sic*] pretty well but no one has used him since he was sick to see if he stands it all right. He and Belle run out to pasture together."[56]

> "Yesterday I got Jim shod and the buggy fixed"[57]

Mixed with the less than good news about his father and family problems, Harris was receiving letters like this from Clara who was then in Harmony, New York:

> "Marian and I have been to Ashville this evening and got a whole armful [*sic*] of mail, but nothing among it all satisfied me as your letter did which I did not see at first and and [*sic*] I was worried for fear it had not come. ..."[58]

His fiancé was also mindful to keep him abreast of any events of geological interest in the Jamestown area, even while he was in Yorktown, Virginia living in a fisherman's shack:

> "I believe there is a gas well being drilled ... if that is of interest to you. ... It is called the Chase Well."[59]

And she related events not so geologic in character while expressing her concern for him:

> "I was glad to hear of your safe arrival at your destination [Yorktown, Virginia], and I hope that you will enjoy yourself and *be sure* and do not get sick. ... I had a rather swell ride the other day. I came home from Jamestown on the [street] cars and started to walk up the R. R. track. I met the men who work on the track and the boss told me that I might ride up to our crossing on the hand car. So I got on and I came up in a hurry. It was much better than walking up in the sun." [Emphasis in the original.][60]

Harris was in Yorktown in April and June, 1890 on assignment for the U.S.G.S. to study the well known Miocene beds of the Yorktown area. By this time, Harris was well and truly into Tertiary work, for Dall's report to the Director of the U.S.G.S. for June, 1890, lists Harris with a promotion, "Gilbert D. Harris, assistant paleontologist", and Dall describes Harris' trip to Virginia:

> "Mr. Harris has assisted in the routine work and has been also able to give a few weeks to field work on the Yorktown, Virginia, peninsula, all that our scanty allotment would permit of undertaking. ... In the month of June Mr. G. D. Harris was sent by me to the vicinity of Yorktown, Virginia, to make some collections from the Miocene of that region and verify some stratigraphic details which were in doubt. He was absent about two weeks with satisfactory results." (Powell, 1891a, p. 109, 111).

Based on his Yorktown work, Harris prepared a manuscript, complete with outcrop sketches and fossil descriptions. This manuscript was not published in its entirety, however, until 1993 when the Paleontological Research Institution published a facsimile of Harris' handwritten manuscript with annotations by Lauck W. Ward (Ward, 1993). The failure to publish this work is particularly puzzling in light of what Dall had to say about Harris' Yorktown study in the same report quoted above:

> "This work has been carried out in an exceptionally satisfactory manner, geologically speaking and will be incorporated in the correlation essay." (Powell, 1891a, p. 109).

Unless there were two different studies made, Dall must have been referring to Harris' Yorktown work.

Druid Wilson, a former student of Harris' at Cornell in the early 1930s and a paleontologist with the U. S. Geological Survey for many years, kept the manuscript in a file cabinet in his office. He thought it was part of material he inherited from Julia Gardner, distinguished Cenozoic paleontologist and his predecessor in that office. According to Wilson[61], even though the manuscript had no name on it, everyone who saw it recognized its value and most recognized Harris' handwriting as well. In his mind, these two things preserved it over the years.

As to why it was never published, Wilson felt that based upon the writing style and the fact that there was no name on it, there was never any intention to publish it, at least not as it was. Wilson thought that the manuscript represented notes that Harris put together for Dall as they were preparing their large Neocene volume. Information from this 1890 manuscript was, indeed, used by Dall and Harris in their *U. S. Geological Survey Bulletin* 84 (1892, p. 59–62). About 20 years after this, Clarke and Miller (1912) also used some of the information.

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[55] Lydia Harris to Gilbert Harris, June 29, 1890. private collection, WRB; now at HA-PRI, Ithaca, NY.

[56] Floy Harris to Gilbert Harris, July 20, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[57] Clara Stoneman to Gilbert Harris, September 24, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[58] Clara Stoneman to Gilbert Harris, May 3, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[59] Clara Stoneman to Gilbert Harris, May 17, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[60] Clara Stoneman to Gilbert Harris, June 7, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[61] Personal communication, July 12, 1995, and comments in a letter from Druid Wilson to John Pojeta, May 4, 1982, a copy of which is in the HA-PRI, Ithaca, NY.

> "The above section was prepared by G. D. Harris, who made a careful study of the Yorktown cliffs for Dr. Dall." (Clark and Miller, 1912, p. 162).

In 1980, Ward and Blackwelder mentioned the Yorktown work of Harris again:

> "The first comprehensive treatment of the strata on the York river in the vicinity of Yorktown, Va. was done by Harris (1890 unpub. manuscript), Dall and Harris (1892) described some of the beds in this area but made no attempt to name them." (Ward and Blackwelder, 1980, p. 28).

The eventual publication of Harris' original report, as annotated by Lauck Ward (1993), is not only historically valuable for the geological descriptions it contains (many localities are no longer available for study); the manuscript is also a good example of Harris' beautiful penmanship and skill at illustration. Even though originally Wilson did not feel the manuscript was intended for publication in its original state, the annotations added by Ward have made it, in Wilson's opinion, a very valuable addition to paleontological literature.[62] That opinion is shared by a reviewer of the volume who wrote:

> "Knowledge of the stratigraphic localities along the York River would be lost but for the meticulous descriptions of them by Harris as reproduced by Ward. . . .
>
> "This book is recommended to serious students of stratigraphic paleontology of the eastern United States." (Moore, E., 1995, p. 113).

High praise, indeed, for a manuscript that was written over 100 years earlier.

From the comments in Clara's letters, Harris' quarters in a fisherman's shack at Yorktown must not have been very comfortable for him. She continued sending the geological news:

> "I am glad to know that you are through with your present work in Yorktown and are going to get back into more comfortable quarters [in Washington, D. C.]. How dissagreeable [*sic*] it must be wherever you go to be troubled with bed-bugs. . . . I was reading this morning that the N. Y. State Geologist had been travelling through Missouri and some of the Southern States inspecting fossils. I tried to find out something about the Harmony oil well but did not make out much. They are about ready to commence drilling and I believe the name of the man who has charge of it is Charles Dean. . . ."[63]

In one letter, written on July 20th, she enclosed an undated newspaper clipping about "Searching for oil" near Panama, New York and stated that they were:

> ". . . down 1400 feet, and the drill is progressing at the rate of 100 feet daily. It is hoped to reach 2000 feet by Saturday night. As yet there are no indications of oil or gas."[64]

Then four days later on July 24th, there was a small note enclosed with her letter with information from the morning newspaper:

> "1st. The J. E. Dean well near Panama [NY] has proved a dry hole at a depth of 1500 ft. No signs of oil or gas. 2nd. The well that has been drilled by Dean & Co. near Panama has been plugged up and a man left to watch it[65]. It is believed by some that gas has been found."[66]

Clara's letters reflect how much in love they were and how difficult it was for them to be separated:

> "How I wish you could only be here even for a little while. I would like to feel your dear arms around me and to put my arms around your neck and be ever close, close to my darling and receive one of your precious kisses and then maybe I would let you go but it would be so hard. [signed] Your Clara."[67]
>
> "I was sadly dissappointed [*sic*] last night not to receive your regular letter which usually reaches me on Saturday morning. What was the reason, dear one? I trust that it was not because you are sick that you were unable to write, yet I fear that that was the reason. It worries me so to be so in doubt. I went to sleep last night with thoughts of my Gilbert in mind and awoke this morning with a sense of some trouble over me. But I have tried to think that everything was all right and to make myself believe that you had some good reason for not writing. How I wish I was with you then I would know. I received your letter of Monday in good time and have had to make that do for two."[68]

The closer the time came to their wedding, the harder it was:

> "I don't know that I want the time to go by any faster but I do wish this waiting was through and the time had at

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[62] Personal communication, July 12, 1995.

[63] Clara Stoneman to Gilbert Harris, June 15, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[64] Clipping attached to a letter from Clara Stoneman to Gilbert D. Harris, July 20, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[65] A small article about plugging a gas well near Harmony, NY appeared on page 1, *Jamestown Evening Journal*, July 21, 1890.

[66] Note enclosed with a letter from Clara Stoneman to Gilbert Harris, July 24, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[67] Clara Stoneman to Gilbert Harris, June 18, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[68] Clara Stoneman to Gilbert Harris, July 20, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

> last come where we could be together. Oh! I do wish it so much."[69]
>
> "I can hardly realize that in so short a time there will be no more of this uncertain communication. Then how happy, happy we'll be."[70]

In her letters were repeated references to her fear of illness. Any time there was a break in his schedule of letters, Clara feared for his health:

> "When she [Marian] came back [from the post office] she said she had bad news to tell me, that there was no letter from Wash. with your handwriting upon it. That worried me somewhat for I feared that either there was no letter from you or that you were sick and someone else had written for you but as she looked rather pleasant I concluded that nothing special had happened." [Harris had typed the address. At that time Clara had never seen a typewriter.][71]

Her concern was not misplaced, for after returning to Washington following his father's funeral, Harris must have injured his back:

> "I am sorry for your lame back. It is not pleasant I am well aware. I hope it is well by this time. I am afraid you are trying to do to [*sic*] much muscle work. You seem to be so busy all the time. I am afraid it is not well for you."[72]
>
> "I hope your lame back has 'let up' before this, but if it has not I wish you would see if you could do something to make it do so. 'An ounce of prevention is worth a pound of cure' you know. Possibly though, you will not thank me to quote such a worn out proverb as that for your benefit."[73]

But all was well eventually:

> "I am glad to know that your back does not trouble you now and hope it will not again."[74]

Living as most of us do in modern urban settings we forget what life was like in a farm community before the advent of antibiotics and the modern medical care that we enjoy today. Illnesses and injuries we do not even consider important were often life-threatening in 1890. In several family letters there are references to the deaths of friends and relatives alike. This must have had an effect on Harris, especially news about the death of children as he was about to be married:

> "Dr. Wellman has lately lost his little boy about two years old"[75]
>
> "One of the Forbes twins died Saturday night. It [*sic*] had inflammation of the brain. They thought the cause of its [*sic*] death was falling off the veranda and hitting its [*sic*] head on a stone."[76]
>
> "Awhile ago I read that Blance Ames Weate had a daughter born and this week I read again that her boy was dead."[77]

There was communication between the two families and Clara was aware of Francis Harris' condition, for she wrote to Harris:

> "Floy's [Gilbert's youngest sister] letter was very nice and interesting. I was much amused at the way she described some of the happenings. . . . It is too bad that your father has to be sick so much and it seems strange that he can stand so many sick spells. I wish I could go down to see your folks but I cant [*sic*] see the way to do so soon."[78]
>
> "I am sorry to know that the state of affairs at your home is not more cheerful and I would think your father would be about discouraged. It is so bad for your mother to have so much care upon her now. It is really too bad neither of you two boys can be at home just when your folks need you the most. But I suppose that is the way of the world."[79]

But all this constant correspondence was not without its difficulties for young Clara, especially when she considered that Gilbert was all alone in that big city [his brother did not arrive until late July 1890], and that he might not have his "position" renewed:

> "The mosquitos are so thick I am afraid they will eat me up so if this letter should stop suddenly in the middle of a sentence you may know what has happened. I have the ammonia bottle standing near. . . . I was quite surprised to learn that Rollin will take up his abode in Washington. That will be very nice, especially if you can live with him, although I should think you would dislike to leave Miss Brown. But then I suppose if that 'old maid' (I would be so polite as to say 'elderly maiden') entangles you by her wiles you would then have to leave him [Rollin] anyway.

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[69] Clara Stoneman to Gilbert Harris, October 23, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[70] Clara Stoneman to Gilbert Harris, November 8, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[71] Clara Stoneman to Gilbert Harris, October 2, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[72] Clara Stoneman to Gilbert Harris, October 2, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[73] Clara Stoneman to Gilbert Harris, October 5, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[74] Clara Stoneman to Gilbert Harris, October 12, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[75] Ida Harris to Gilbert Harris, May 4, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[76] Ida Harris to Gilbert Harris, June 10, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[77] Clara Stoneman to Gilbert Harris, October 30, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[78] Clara Stoneman to Gilbert Harris, June 28, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[79] Clara Stoneman to Gilbert Harris, July 28, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

> The 'E.M.' better 'watch out' or she may hear something heavy drop some day and feel it too[.] . . . You did not write whether you had received your appointment this year or not so I concluded you did not know about it when you wrote last. I suppose that will come around all right in time."[80]

The visit Gilbert's mother wanted and Clara desired came as a result of his father's death in August of 1890. His stay at home was a short one, however, for Clara's letters resume on September 13, 1890. Apparently he and Clara had talked during their time together about their future and his aspirations, and about their beliefs. Gilbert, also, must have spent some time with his prospective father-in-law, for Clara wrote:

> "I would be very glad to help you with your writing when I get to Washington, that is, if you think I can write good enough but you know that socks are prone to holiness and I am afraid that yours will be in that condition by the time I get there. Maybe if I get up extra early in the morning I can attend to both. . . . I presume that you think my father is not very talkitive [*sic*], well he is not I must say, but still if you give him time to collect his ideas he would make quite a conversationalist . . . I tell you all this to show you that he is not dumb as you may hear sometimes. . . . If staying away from church for a few weeks throws you so far off the track what do you suppose I must be who has not been to church from nearly a year"[81]

This reference to church gives a glimpse into the spiritual side of Harris' life, of which, unfortunately, we otherwise know very little. There must have been at least some family tradition of belief and church going, for the family kept a large Bible in which important events were recorded (Lopus and Ingham, 1977), and family letters contain various religious references:

> "I am leading about as simple a life as the shepherds did at Christ's birth. This is some comfort to think that the angel appeared to them first."[82]
>
> "Ida and I went to church[83] to'day [*sic*], the first time for months."[84]

In their description of Harris, Downs and Headley (1921, p. 467) state that, ". . . in his religious views [Harris was a] liberal.", but there is no indication what denomination or the source of the information[85]. The funeral services for his mother, Lydia Harris, who died in 1918, were officiated by Reverend Walter Taylor of the First Unitarian Church of Jamestown. Likewise, in 1952, Rev. Ralph N. Helverson, of the First Unitarian Church of Ithaca, officiated at Harris' funeral.[86] There is, however, no record in the archives of the First Unitarian Church of Ithaca to indicate that Harris was a member of that church, at least not an active member.[87] Judging by her letters, early in their relationship, certainly by the time Gilbert returned home for his father's funeral, if not before, Clara realized that religion was important to him. Nevertheless, there are few references to religion in any of Harris' writings or letters.

Clara's family appears to have had about the same kind of religious background, but one of her sisters was more involved in attending church and participating in its activities than Clara. In a letter to Gilbert, Clara describes Basie's work of teaching some Chinese workers to read and explains how she and a friend felt that after working all week, it wasn't right for Basie and her friend, Lillian Cook, to ride eight miles every Sunday to give them English reading lessons:

> "But you can't make Basie think it is anything but right. She would think she was not doing her Christian duty if she did not keep at it as long as she had a breath left."[88]

Clara seemed a bit concerned about her own lack of "church going". She said:

> "This morning when I ought to have been writing to you I was breaking the Sabbath by gathering hickory nuts."[89]
>
> "I suppose as it is the 5th of Oct., that you are enjoying a sermon at 'our' not 'your' church this evening. It has been so long since I have been to church that I fear I shall not know how to behave myself when I do go."[90]

While preparing for his upcoming wedding and trying to get his room in Washington, D.C. cleaned and refurbished for his bride, Harris had not overlooked his professional activity. In fact, he was very much involved with the large report that Dall was preparing:

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[80] Clara Stoneman to Gilbert Harris, July 6, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[81] Clara Stoneman to Gilbert D. Harris, September 13, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[82] Cora Harris to Gilbert Harris, May 11, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[83] The actual church affiliation is not known, but Harris' funeral services were held at the Unitarian Church in Ithaca, NY.

[84] Floy Harris to Gilbert Harris, July 20, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[85] Statistics for the Class of '86 list Harris as "Unitarian" and "Republican", but that he was, "not a church member."

[86] *Ithaca Journal*, December 5, 1952.

[87] Harris was not listed in the "Outstanding Unitarian Laymen" section of the booklet printed as part of the 75th Anniversary celebration of the church in Ithaca. Archives of the First Unitarian Church of Ithaca. Number 4590, Box 5, File 5-43 (Church History). RMC-KL, Cornell. Helverson did not recall Harris being a member of his church; letter to W. R. Brice, July 15, 1995. HA-PRI, Ithaca, NY.

[88] Clara Stoneman to Gilbert Harris, September 24, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[89] Clara Stoneman to Gilbert Harris, October 5, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[90] Clara Stoneman to Gilbert Harris, October 5, 1890. Private collection, WRB; now at HA-PRI, Ithaca, NY.

> "For the rest Mr. Harris has been busy collating and sifting the geologic literature of the Plio-Miocene under my direction, for the purposes of the prospective essay, which, as elsewhere mentioned has been carried as far as Virginia in the circuit of the coast. . . . In this matter [the correlation paper literature review] I have had valuable assistance from Mr. G. D. Harris, assistant paleontologist of the Division of Cenozoic Paleontology" (Powell, 1891a, p. 109–110, 112).

Then, as if he didn't have enough to do with his duties at the U.S.G.S. office, Harris prepared his second publication using data he must have acquired when he was at home for his father's funeral. The news that Clara sent him about the drilling activity in the area apparently started him thinking and when he was home he sought out the parties who were involved. He was able to see not only the drilling logs, but the actual samples as well because he wrote a description of the stratigraphic section exposed in the well which ended as a dry hole.

In writing the paper, he had the occasion to use the work of Charles Prosser who had been H. S. Williams' assistant the last year Harris was a student at Cornell. Harris recognized the scientific value of the material brought out of the hole during the drilling process:

> "During the early part of the season, a well was sunk at Jamestown, N. Y. to a depth of 3263 feet. For the proprietors, the undertaking was somewhat unfortunate, since neither oil nor gas—the objects sought—were met in paying quantities, to the geologist, however, the extensive suite of drillings carefully preserved and labelled, are of uncommon interest owing to the depth and peculiar location of the well; it furnishes him data for determining the lithological characters, thickness, and amount of dip in this region of several formations penetrated,—items heretofore but vaguely known from surface observations." (Harris, 1891a, pp. 164–165)

The date on the last page of this publication is December 1890, just before he left for Jamestown for a very important engagement. Gilbert and Clara were married on December 30, 1890[91] at her parents' home in Lakewood. A small announcement in the local paper datelined "December 30, Lakewood" said:

> "Tuesday at 12 m. Miss Clara Stoneman at the home of her parents, Byron Stoneman, was united in marriage to Gilbert Harris of Washington, D. C. They left on train 12 for Washington where they will reside, carrying with them best wishes of a host of friends for a happy and prosperous journey on the matrimonial sea. Rev. E. B. Barrows was the officiating clergyman."[92]

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[91] Palmer (1953c) gives the date of their marriage as December 29, 1890, but the page of marriages in the family Bible (Lopus and Ingham, 1977) has December 30, 1890. Also, the December 30 date is consistent with the marriage notice in the newspaper.

[92] *Jamestown Evening Journal*, Friday, January 2, 1891, p. 2.

CHAPTER 2. RETURN TO WASHINGTON

From the letters that survive, it appears that Clara and her new husband stayed in Washington, D. C. at a rooming house on 17th Street for a few months after they were married. She must not have gone out very much, however, because later, when she was at her parents home, a person who had some knowledge of Washington, D. C. commented about the buildings and asked her opinion about them:

> "The doctor who attends Pa was a soldier and has been in Washington and knows something about the city and surroundings. He was asking me if I had been to Arlington and some other places. Of course I had to say I had not. 'Well,' he said, 'you have been rather domestic, haven't you.' Then he said that the public building, such as the P.O. and Freemasonry, etc. were interesting places to visit. I said, 'Yes', but I did not tell him I had not been there either." [1]

But their brief trial at domesticity came to a close when field season began, for Harris had his geological activities and was off to the shore again to continue the work from the previous year.

Exactly where Harris was and what he was doing during this period are unclear for he was really moving from place to place. After some time in Washington, D. C., he went to Maryland, then Jamestown, New York for the birth of his daughter, then to Arkansas, back to the Maryland shore, and finally back to Washington, only to lose his position with the U.S.G.S.

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[1] Clara S. Harris to Gilbert D. Harris, July 23, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

Dall's report for 1890–1891 said this about Harris' travels:

> "In April [1891] Mr. G. D. Harris was detailed to accompany the State Expedition, under the auspices of Johns Hopkins University, directed by Prof. W. B. Clarke, which visited many important Tertiary outcrops of the Maryland shore.
>
> "On the 26th of May [1891], Messrs. Harris and [Frank] Burns were directed to proceed to Easton, Maryland, to examine the Tertiary rocks and obtain specimens from localities frequented by Conrad and other older paleontologists. The results of this expedition, though satisfactory, are not yet reported in detail, and a statement of them is therefore impracticable at the present time." (Powell, 1891b, p. 117).

Harris was working along the Bay shore of Calvert County, tracing:

> ". . . every important stratum represented in these cliffs from its northernmost outcrop to where its southern dip carries it beneath time level." (Harris, 1893a, p. 21).

Harris discovered that several observations made much earlier by Conrad were not quite correct:

> "Conrad doubtless examined this locality somewhat hastily, insomuch as several fossiliferous beds occur in the sand and clay regarded by him as 'destitute of organic remains.'" (Harris, 1893a, p. 22).

In the publication about the fossil strata of the Calvert Cliffs that resulted from his labors in the springs of 1891 and 1892, Harris said in a footnote:

> "The field observations upon which this essay is based were made under the auspices of the U.S. Geological Survey, April 23–30, 1891, and May 23-June 1, 1892. During the latter period, the writer was accompanied by Mr. Frank Burns, whose diligence and skill at collecting very materially aided in procuring the results here presented." (Harris, 1893a, Footnote, p. 21).

Harris left a diary describing the excursion of the April, 1891.[2] In addition to the U.S.G.S., the expedition included people from the State College of Agriculture and Johns Hopkins University. The party left Baltimore on April 23rd and travelled by the state police steamboat, *Gov. P. F. Thomas*, to Annapolis where two schooners were taken in tow and the group spent the first night lying off Fair Haven. As with most of Harris' descriptions of his journeys, he gets right to the geology:

> "Friday,a.m. April 24.—Breakfasted at an early hour in the open air, and rowed to the Fair Haven wharf. Some bluish clays of doubtful age were noticed just above the wharf, but the main interest centered in the bluffs of Miocene sands and clays and diatomaceous earth about a mile below the wharf, or about one fourth mile below where a creek makes into the Bay. . . . Having returned to the wharf, our attention was called to a boulder lying upon the beach about one fourth mile below the same. It contained numerous casts of Mollusks, and was said by N. H. Darton to be from the silicious layer that characterizes the very base of the Miocene."[3]

According to Harris' notes the group continued down the Chesapeake Bay making stops along the way to examine the exposures and collect fossils. By Saturday evening, April 25th, the group had reached Jones Wharf on the Patuxent River:

> "Below this wharf the low bluffs afford some good fossils, and during the forty minutes spent there no time was squandered."[4]

At times Harris appears frustrated with the pace of the excursion, not allowing him enough time to fully describe and explore an exposure:

> "April 28, 1891. The wind which had been blowing from the south during the fore part of the night had shifted by morning to the northward and was rolling in a fairly heavy sea upon us. Never-the less [*sic*] the row-boats were lowered and we were all safely landed at the base of Nomini Cliffs. Below the place of landing, which was about mid way of the cliffs, the writer made a section, but as the rest of the party were going up stream he was obliged to hasten away in the same direction without having made a collection of any sort." [5]

They collected fossils and examined the strata near St. Mary's, in the Pope Creek area, and along the banks of the Potomac River. During the stop at Clifton Beach, one of the party found what was described only as a "saurian tooth" with a fragment of the lower jaw. After a side trip to Mount Vernon, the group returned to

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[2] *Miocene of Maryland* (Cover title); *Notes on a Geological Excursion in Western Maryland*, by G. D. Harris, 1891 (Inside title page); an unpublished manuscript describing the field excursion of April 23–30, 1891, including many measured sections and fossil lists. There is no indication of when Harris wrote the manuscript or for what purpose. This manuscript is bound with typed copies of fossils descriptions and illustrations from Volume VI, Part I (1829) and Part II (1831), *Journal of the Academy of Natural Sciences of Philadelphia*. HA-PRI, Ithaca, NY.

[3] *Miocene of Maryland* (Cover title); *Notes on a Geological Excursion in Western Maryland*, by G. D. Harris, 1891 (Inside title page); unpublished manuscript, p. 1. HA-PRI, Ithaca, NY.

[4] *Miocene of Maryland* (Cover title); *Notes on a Geological Excursion in Western Maryland*, by G. D. Harris, 1891 (Inside title page); unpublished manuscript, p. 2. HA-PRI, Ithaca, NY.

[5] *Miocene of Maryland* (Cover title); *Notes on a Geological Excursion in Western Maryland*, by G. D. Harris, 1891 (Inside title page); unpublished manuscript, p. 3. HA-PRI, Ithaca, NY.

Washington, D. C. on Thursday, April 30. In Part II of this manuscript, Harris provided drawings of the sections with thicknesses of each major layer and he gives a list of the fossils found at each site. Many of the sites described in Part II are given site numbers, *e.g.*, the section at Nomini Cliffs mentioned above is number 2344. These numbers appear to be U.S.G.S. locality numbers which accompanied the fossils collected at each site.

Apparently Dall sent Harris to do other field work after he completed his investigation of the area at Calvert Cliffs, for a letter Clara sent from Washington, D. C., dated May 31, 1891, was sent to him at Easton, Maryland. Thus he must have moved on to the Eastern Shore of the Chesapeake Bay by the end of May. According to Clara's surviving letters, he stayed at Easton, Maryland at least through June 12th.

In this letter she sent from Washington on May 31st, Clara wrote that she had shared their secret with her family:

> "I have just finished a letter to Basie [her sister], in which I enclosed a private note telling of a certain family matter. I thought it better to tell them this early because I wanted them to use a little discretion about informing inquiring friends when I going to be at home. I am glad at any rate that it is off my mind and I am anxious, too, to know what they will say about it."[6]

The "it", of course turned out to be their daughter, Rebecca Stoneman Harris, born October 21st, 1891. She was probably named after Clara's Aunt Rebecca, wife of her father's brother, who died just a few weeks before their daughter was born[7]. The "special news" did not surprise too many in her family, however:

> "I received a letter from Basie yesterday written more especially, I guess, because of the 'private' communication which my last letter contained. She had not been home yet so I do not know yet what Ma will have to say on the subject. It seems, however, that the news was not at all unexpected and I did not much think it would be. She did not intimate, in the least, that the news was at all unwelcome either, as I was afraid it would be."[8]

And later, after she had been visiting his home, she discovered that Gilbert's family was quite happy. ". . . with the prospect of a new relation."[9]

At this point they were living in a rooming/boarding house at 1020 17th Street, N.W., for Clara mentioned getting one of his letters, ". . . when I went down for breakfast.". She also mentioned several other people getting mail at the same time: "Theresa got some letters and a bundle and Mrs. W. [the landlady] a letter . . ."[10] Their budget must have been somewhat limited, for in one letter Clara said that she had been invited on an excursion with some of the other boarders, but declined the offer:

> "They asked me if I would not go but I hardly think it would be advisable either financially or physically."[11]

She was sending him money for his expenses while doing the field work:

> "I hope that you have received my letter containing the money before this time, and that my failure to send it before has not caused you serious inconvenience."[12]

Their living expenses at the time seem modest:

> "I paid Mrs. W. this morning for our board. It was $17.00, or will be when I pay her the two dollars that I did not have change for this morning. It was really $17.50 but she said she wouldn't take the $.50 as I staid [*sic*] here thro [*sic*] the days and got my meals the best way I could."[13]

For what period of time the $17.00 covered is unknown. Also, whether from necessity or custom, Clara was making some of her own clothes:

> "I have finished my gingham dress, and let out the seams in my black waist [blouse]. Does such feminine news interest you?"[14]
>
> "I went down town this morning and bought me a white waist to wear with my white dress skirt so that I might get some good of that. I can also wear it with other skirts if I want to. I also bought 20 yds. of *bird's-eye linen*. Can you guess what will be made of that?" [Emphasis in the original.][15]

But there must have been a little extra money available:

> "Last Friday eve. we all went to see The Gondoliers. Miss A., Theresa, May and myself went and left Mr. & Mrs. W. at home but when we came out of the theater whom should

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[6] Clara S. Harris to Gilbert D. Harris, May 31, 1891. Private collection, WRB; now at HA-PRI,Ithaca, NY.

[7] "We received a telegram today telling that Aunt Rebecca was dead." Clara S. Harris to Gilbert D. Harris, September 10, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[8] Clara S. Harris to Gilbert D. Harris, June 5, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[9] Clara S. Harris to Gilbert D. Harris, July 30, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[10] Clara S. Harris to Gilbert D. Harris, June 5, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[11] Clara S. Harris to Gilbert D. Harris, May 31, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY

[12] Clara S. Harris to Gilbert D. Harris, June 5, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[13] Clara S. Harris to Gilbert D. Harris, June 10, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[14] Clara S. Harris to Gilbert D. Harris, June 5, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[15] Clara S. Harris to Gilbert D. Harris, June 6, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY

> we see waiting for us but Mr. & Mrs. W. Mrs. W., you know, doesn't approve of Jeannie Winston. For my own part I did not see much to admire in her. I did not enjoy her acting the part of a man because I could not forget that she was a woman. Not that I was shocked in the least but I could not see any reason for her taking that part."[16]
>
> "And I squandered 10 cents on a pint of cherries, which was quite extravagant I suppose, but I was so thirsty and they looked so cool I couldn't resist the temptation."[17]

While these prices seem trivial by the standards of 100 years later, they were not small at the time. The couple must have been on a tight budget and money was a constant worry. For example, money matters surfaced in one of Clara's letters to Gilbert while she was staying with her parents before Rebecca was born. In a previous letter Clara had requested he send her some postage stamps (which he did); he apparently assumed she was asking, in a roundabout way, for some spending money:

> "Your kind letter of August 1st containing the money reached me without any accident on Monday P.M. I am much obliged for the money although I had no great need of it just now. I have not spent much of the $15 that I brought with me [almost a month ago]. Today Pa paid me back what I lent him to pay the men and now I have in all $24.25. That, I think, ought to be enough for my wants until you come and maybe longer so I do not believe you will need to send any money unless something unusual happens."[18]

Rollin and Emily Harris were in Washington as well and living close enough for Clara to visit with them while Gilbert was away:

> "Yesterday afternoon I went over to see if Rollin and Emily had entirely melted in to grease spots. They were usually well. Emily had been canning strawberries. She was trying to keep as cool as possible by not wearing any more clothing than the law requires. I staid [*sic*] to dinner with them and had quite a visit."[19]

By July 14, 1891, Clara was with her parents in Harmony, New York and Harris was back in Washington, D. C. This separation was especially difficult for Clara as she was in the sixth month of pregnancy and away from her husband for the first time since their marriage:

> "Doesn't it seem longer than two weeks since I left Washington. I haven't *had my back scratched* since I came home. It's getting pretty itchy. Don't you pity your poor wife?" [Emphasis in the original.][20]

He, too, must have been expressing his feelings about the difficulties of their separation, for in one of her letters, Clara wrote:

> "My poor boy, I know just how hard it is to be alone as you are and I would be glad if I could get a letter to you everyday but I can not [*sic*]. I am very sorry you have worried so much about me. I am perfectly well and you may be sure if anything unusual should happen you would be informed as soon as possible. . . . My darling I do appreciate how much you love me and am very grateful. Please don't worry yourself sick."[21]

There was reason for his concern because at one point she complained of a bad rash on her feet that caused strong itching and swelling:

> "You ask in regard to the state of my health. My digestive organs are in very good order. . . . Just now, however, I am about distracted on account of my feet. They are quite a good deal swollen and all along the sides of my foot and toes especially little hard bumps swell up and burn and itch terribly. The lumps on my toes are in ridges. They do not come out like mosquito bites but seem to be under the skin. My hands began to be the same this morning but do not trouble me now. If they do not get better I shall have to go to the Dr. I expect. They burn so now that I can hardly keep still to write."[22]

Four days later her feet were still swollen:

> "I sent with Basie yesterday and got me some cloth slippers,—No. 6. Of course they will be too large when the swelling goes down out of my feet."[23]

Clara, in fact, did little to allay his fears for her health, and often included just enough information to really start him thinking:

> "I am feeling about as well as usual. My hands and feet trouble me a little yet but now I am troubled some by dizzy spells and I cannot read or do anything evenings because I get so nervous and my head feels so. I guess it is nothing very alarming. Only think there is only a little over one month more to wait!"[24]

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[16] Clara S. Harris to Gilbert D. Harris, May 31, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[17] Clara S. Harris to Gilbert D. Harris, June 6, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[18] Clara S. Harris to Gilbert D. Harris, August 5, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[19] Clara S. Harris to Gilbert D. Harris, June 5, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[20] Clara S. Harris to Gilbert D. Harris, July 26, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[21] Clara S. Harris to Gilbert D. Harris, August 15, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[22] Clara S. Harris to Gilbert D. Harris, August 19, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[23] Clara S. Harris to Gilbert D. Harris, August 23, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[24] Clara S. Harris to Gilbert D. Harris, August 28, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

Perhaps Harris had good reason to worry, for the infection on her feet continued to trouble her well into September:

> "I feel well enough but the weather is so warm and my feet still trouble me so that I feel decidedly uncomfortable most of the time."[25]

This sharing of illnesses was a two way street, however, for in early September of 1891, Clara wrote:

> "I do not like to hear of your recent sickness. I hope that you will do all you can to prevent it becoming a serious trouble. What is the cause of it?[26]

In an earlier letter Harris must have offered to hire someone to look after her if only she would return to Washington. Her reply:

> "I hardly know how to begin to say what I want to say, though first I know you will be dreadfully disapointed [*sic*] if I say I do not believe it would be best for me to go back to Washington as you want me to do. But really, Gilbert, I do not think it would be best and it might be just the thing that would make trouble for me. It hardly seems to me it would be best to go to the extra expense hiring nurses, etc. as long as I am right here now where both our families are. Of course I know that you would be willing to pay all the extra cost and it would be very, very pleasant to be with you again as you suggest and I know you could not help being anything but the best of husbands, but only think, dearest, I have already been here more than half the time that will have to elapse before you can come home, so it does not seem to me, at all, to be the best policy to go back to Washington when everything is taken into consideration. I told Ma that you wanted me to come back to W. and she said, 'Well you are not going.' Don't worry about my having to work, it's my own fault if I do it because they all tell me not to and I have not done so much this week . . ."[27]

While visiting his mother and sisters outside of Jamestown, Clara wrote:

> "I have enjoyed my visit here so far and don't feel homesick or lonesome only it doesn't seem right to be here without you. I look towards the barn every once in awhile and it seems as though that little door ought to open and you come forth in your 'regimentals'—blue 'frock' and 'overalls', muddy boots and military cap. But, alas I can look as often as I will, I won't see you."[28]

And added to her loneliness was the fact that her father was quite ill:

> "Oh! how I do wish I knew how you are this morning. I am made aware by a certain feeling in my throat that I can't let my thought move in a certain direction or I would be crying in short order and that wouldn't do at all. . . . I could be comparatively happy here [at home] if it were not for the fact that Pa is very sick again. He is not as bad off as he was at the worst last fall but I am afraid that some of his symptoms are a great deal worse. I don't like to think of it but I am afraid he can't possibly last much longer. . . . I did not sleep much last night for just as I would get to sleep Pa would begin to groan and that would wake me up. . . . I do hope you are well, my dearest one. You may be sure I shall not forget you and that my thoughts go back very, very often to that room at 1020 17 St. and wish that I was there."[29]
>
> ". . . Pa requires a good deal of attention. I hardly know whether to say that he is better or not. He does not seem to be in quite as much pain, but he is still very weak and, oh, so nervous. He likes to have somebody by him all the time and especially when he awakes from a nap if he sees that someone is sitting by him he does not get so weak and nervous. I have staid [*sic*] by [him] all that I could day times because I can't do much work nor sit up nights. . . . Pa's mind wanders a great deal, although at times it is as clear as ever. He talks about the [Civil] war mostly. The other day he told Basie that there ought to be lots of white lead on hand so that the hired men could make bullets."[30]
>
> "Pa continues about the same. He walks out a little but is not able to attend to the work at all. He lies in bed most of the time."[31]

In many of the letters Clara keeps referring to their child as "Robert."

> "This morning I weighted 143 lbs. Some of that may be 'Robert', however. . . . Ma says I can't have a 'Robert', I must have 'Bryon' . . ." [her father's name][32] "I think Robert is prospering."[33]

As the time of birth drew near, however, Clara began to acknowledge the possibility of a girl, perhaps twins, and the name Rebecca is mentioned:

> "Robert and I weigh *155 lbs.* I don't know but I ought to say Robert and Rebecca. Basie says I ought. The other day

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[25] Clara S. Harris to Gilbert D. Harris, September 25, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[26] Clara S. Harris to Gilbert D. Harris, September 2, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[27] Clara S. Harris to Gilbert D. Harris, August 20, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[28] Clara S. Harris to Gilbert D. Harris, July 30, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[29] Clara S. Harris to Gilbert D. Harris, July 14, 1891. Private collection WRB; now at HA-PRI, Ithaca, NY.

[30] Clara S. Harris to Gilbert D. Harris, July 16, 1891. Private collection, WRB; now at HA-PRI-Ithaca, NY.

[31] Clara S. Harris to Gilbert D. Harris, July 26, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[32] Clara S. Harris to Gilbert D. Harris, July 16, 1891. Private collection, WRB; now at HA-PRI-Ithaca, NY.

[33] Clara S. Harris to Gilbert D. Harris, July 26, 1891. Private collection, WRB; now at HA-PRI-Ithaca, NY.

> she found an ear of green corn that had two small ears growing with the same husk. She considered that a very favorable omen of coming events." [Emphasis in the original.][34]

The idea of twins struck a responsive chord with Clara because several weeks later she wrote to Gilbert:

> "This afternoon I went out to the corn farm to try Ma's standard of measurement. She said that the summer before Basie was born she could get through the corn . . . [rows] . . . as easily as could be. I could not begin to do so. What if Robert would happen to have a brother or sister come along to keep him company! Or possibly more than one!! Then I guess you would have to stay at home evenings to help hold him. You could not go to see 'Sally' as any one else." [Emphasis in the original.][35]

One can only wonder about the reference to "Sally."

In many ways being at home again with her family was good for Clara, but at the same time her status had changed; now married and pregnant:

> "Everything seems quite natural here although I do not think it seems quite the same as it used to before I went away and I expect the reason is because I am not able to go ahead and work and drive [the horse and wagons] around as I used to. . . . I soon remember that I am not expected to do so and about every move I make either Basie or Ma tells me to go and sit down, that I need not do that. . . . Pa evidently thought I might lend a hand . . . [filling the water wagon] . . . for when I went into his room he said, 'I don't want you to do any pumping.'"[36]

Upon her return home, however, some friction appears to have developed between Clara and her sister, Basie. Perhaps with Clara gone, Basie was suddenly cast in the limelight and liked the new role, and with Clara back in the house Basie's new position in the family was threatened. In one letter Clara related to Gilbert:

> "This morning Basie said to Marian that the work had seemed so short and I remarked that it had not seemed so to me but that it had been a dreadful long time since Monday. 'Oh!' Basie said, 'you old married woman you. I wouldn't be an old married woman for anything!' "[37]
>
> ". . . I wouldn't feel bad when going away. Basie said, 'Feel bad about going away! Why I supposed you would be so anxious to get home that you could hardly wait.' She was telling Ma this morning that she guessed I was thoroughly weaned. I know I ought to be ashamed of myself, but if I had not a good reason for staying here I could cut my visit pretty short."[38]

And at another time, Clara said:

> "This morning I mentioned a certain thing that I must do before going 'home' and Basie says, 'Don't you think you are smart, don't you'"[39]

Apparently her sister felt that Clara should not refer to Washington, D. C. as "home." Even the sleeping arrangements had changed. Whereas before her marriage she shared a bedroom and bed with her sister Basie, but now:

> "As for sleeping I think I told you that I sleep all by myself in the 'guest chambers'. I get up and go to bed when I please."[40]

Even Clara, herself, had difficulty adjusting to her new status:

> "At the grocery [store] the man asked me what my name was and I told him 'Stoneman.' I did not think but what it was until after I had said it and then I did not think it best to explain matters."[41]

In late July of 1891, Clara visited Gilbert's home at "Peck Settlement" for a few days and sent him several letters from there. From her letters, it seems there were street cars operating in the Jamestown vicinity, but not everyone had adjusted to this new mode of transportation:

> "I came from Lakewood on the boat and thence to Dexterville on the new electric cars. . . . I can't see that your folks have bettered themselves on the horse question very much because their horse is old and doesn't go at a 2:40 gate especially away from home and is more afraid of the [electric] cars, besides, than 'Bennie' was."[42]
>
> "Cora brought me over to D.[Dexterville] and I rode from there to the boat landing on the street cars. They are still a great novelty to the Jamestown people. They think it very strange that they [the street cars] will not stop anywhere except on a crossing and the teamsters seem to think they have a perfect right to drive on to the track and stand there until it suits their convenience to get off."[43]

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[34] Clara S. Harris to Gilbert D. Harris, August 30, 1891. Private collection, WRB; now at HA-PRI-Ithaca, NY.

[35] Clara S. Harris to Gilbert D. Harris, September 13, 1891. Private collection, WRB; now at HA-PRI-Ithaca, NY.

[36] Clara S. Harris to Gilbert D. Harris; July 23, 1891. Private collection, WRB; now at HA-PRI, Ithaca NY.

[37] Clara S. Harris to Gilbert D. Harris; July 16, 1891. Private collection, WRB; now at HA-PRI, Ithaca NY.

[38] Clara S. Harris to Gilbert D. Harris; July 21, 1891. Private collection, WRB; now at HA-PRI, Ithaca NY.

[39] Clara S. Harris to Gilbert D. Harris, July 26, 1981. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[40] Clara S. Harris to Gilbert D. Harris, July 23, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[41] Clara S. Harris to Gilbert D. Harris, July 26, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[42] Clara S. Harris to Gilbert D. Harris, July 26, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[43] Clara S. Harris to Gilbert D. Harris, August 2, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

Based on a letter Clara wrote to Gilbert in August of 1891, his position with the U.S.G.S. at the Smithsonian must have seemed fairly secure. He had just completed another paper for publication (date on the last page is August 1891; Harris, 1891c), and the Arkansas material had been published or was about to be published (Simonds' letter about it, mentioned earlier, was dated September 21, 1891). At this point, by letter, they began discussing having a home in Washington. The strength of her character can be seen in this excerpt, for it appears Gilbert had either hinted or asked her directly to approach her father for a loan (gift?) to assist them in getting a house:

> "In regard to what you have written about your thoughts and plans for a home in Washington you may be sure that I will agree in wanting to have a home there as soon as possible, but I can not [*sic*] say I would be willing to ask my father for the money at the present anyway. If it was very necessary, I could do it, but I would rather not be obliged to do so. Of course I understand perfectly, Gilbert, that you would not expect to 'sponge' the money so do not think I hesitate on that account. In the first place Pa's money is all out in mortgages, at present, except that which he needs for the various expenses which is no small amount,—and then, I know to [*sic*] well how much trouble it would make. I hope you will not be provoked at me for not liking to do as you wish, but I thought it best to tell you on the start just how I feel. By your letter of the 30th, I understood you to mean you wanted to have a house built so that we could go there to live this winter. Do you think that would be possible and are you sure it is the best plan to try to do so? And do you think it would be cheaper and better to build a house than to buy one outright? Do not think I ask these questions expecting you to think I am opposed. I am not but I wish to understand the subject a little better."[44]

His reply must have been quite persuasive, and he must have told his family about his plan for a house in Washington and the need for money to finance it, for in letter written only a few days after the one quoted above, Clara said:

> "I feel ashamed of myself to think I can't do more to help you in your plans for getting a home in Washington. As long as I can't or don't do more as you would wish, I don't deserve your kindness in having the deed of such a lot as you will get made out in my name. I would feel better about it if it were not so. I have spoken to Ma and told her something of what you have in mind and she told me what I knew well enough before that all the money Pa has is in mortgages. I believe he has a few hundred in the bank but that he needs for paying taxes, hired men, etc. However, if I have a chance when he is not too much worried over other things, I will try and talk with him on the subject.
>
> "As I did not know what you had in mind while I was at your mothers [*sic*] I had no occasion to talk with her about your plans and I may not have another chance very soon, maybe not before you come home, but if you have already written to your folks I do not know what more I could say that would have any influence. I suppose you will be about discouraged and think I am pulling right against you. I don't wish too [*sic*] and if it seems so to you it is not from obstinacy."[45]

Their living arrangements after the birth of their child were very much on Gilbert's mind and he must have communicated this concern to her. But once again, Clara's determination to say what she feels comes through:

> ". . . [this] brings me to the point of our housekeeping arrangements for the coming year. You speak of my not liking to live out of the city. I suppose it would be lonesome at first but I would be perfectly willing to live wherever it seemed best even though I did have to undergo some discomfort. However, for the next year perhaps it would be better for us to live a little nearer friends. It would be more agreeable and safer perhaps in case of an emergency."[46]

Apparently though, Gilbert was not to be deterred by a simple refusal of his first few plans, for in a letter about a week later, Clara responded to yet another option from him about where to live after the baby was born, and, again, she was quite firm about her desire to stay with her parents in the meantime:

> "As to renting a house with R & E. [Rollin and Emily, her brother- and sister-in-law] that would suit me exactly. I think we could manage to 'live together in brotherly love.' Now, darling, please do not scold me nor feel hurt because I do not agree with you in this respect . . .
>
> "I know I have not answered your letter satisfactory [*sic*] but I hope you will try and be satisfied with my decision [to stay at her parents until the baby is born]. . . ."[47]

Her decision not to rent a house with Rollin and Emily seemed to have upset them, for later she wrote to Gilbert:

> "I am very sorry if I have been the means of dissapointing [*sic*] R. & E. about renting the house you and they had in

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[44] Clara S. Harris to Gilbert D. Harris, August 2, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[45] Clara S. Harris to Gilbert D. Harris, August 5, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[46] Clara S. Harris to Gilbert D. Harris, August 12, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[47] Clara S. Harris to Gilbert D. Harris, August 20, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

> view but I did not see how I could do otherwise. I hope you will forgive me, dear."[48]

With their domicile for the next year still undecided, Harris proposed the idea of buying a building lot in an area outside of Washington, D. C. near Ft Meyer, Virginia.[49] He continued his attempts to persuade Clara to come back to Washington, even by telegram. She replied:

> "Gilbert, my dearest one, what has taken possession of you? When I left Washington I thought it was fully understood by both of us that I was to remain north, either at my own home or at yours during October and as long after that as seems best. Now, my darling, why can you not be contented with that arrangement? I certainly have been more comfortable here where I could go as I pleased in my old house clothes and where, if there was any cool fresh air blowing I could have the full benefit of it. It does not seem to me that I could possibly have stood it all this time to have had to dress up and go to Ditto's three times a day to my meals. . ..I would be glad if I could go to you this very minute but I cannot, it would be entirely out of the question.
>
> "Your telegram was not received until 9 o'clock Friday night. Julia brought it from Lakewood. It was answered as soon as possible. You have probably received your answer before this time and feel like shaking the whole Stoneman tribe, your Mother-in-law in particular. She opposed the idea of my going back from the very first. Pa was not told anything about the telegram as he was altogether to [*sic*] sick to be troubled in anyway."[50]

Thus it was; Clara did not return to Washington, but Gilbert had still other plans afoot:

> "Now my dear, I want to know about this new plan of yours of going to Arkansas. That is an entirely new feature of the case. Are you going with White[51] or Prosser? I don't want you to go at all but I suppose it is for you to decide whether you will or not. But, my dear, if you do go don't you see that it will be a great deal better for me to be here where I can have the advice and help of both my mothers than to be in Washington comparatively alone. And besides, I have various things I want to do that I shall not be able to do before Robert comes. By the way he is rather lively today."[52]

The Arkansas venture would mark Harris' return to that state, but his new venture differed from his first one because this time he was employed by the U.S.G.S. and was part of a cooperative agreement between the state and federal surveys. In the Annual Report for 1891–92 of G. K. Gilbert, Chief Geologist, the following items concerned the Arkansas work:

> "The expense of this work [cooperative agreement with the Arkansas Geological Survey] was shared by the state survey and the national Survey, and it was executed by Mr. G. D. Harris, assistant paleontologist, who was detailed by the paleontological branch for that purpose. The field work which occupied the months of November and December 1891, and January, 1892, included supplementary determinations of stratigraphic sequences in Arkansas and the collection of numerous fossils for comparative study." (Powell, 1892, p. 95)

Even while he was planning to leave, he was worried about his wife and she was writing to reassure him: "I wish I knew of some way to prevent you from worrying yourself in to such a nervous state."[53] Apparently his worrying did not prevent him planning the field work in Arkansas. Of course, as he was an employee of the U.S.G.S., and based on the above quotations, it appears he may not have had too much choice in the matter.

As it turned out Clara supported his decision and found a good reason for him to do the Arkansas work:

> ". . . [I will] come to the 'point' and tell you what I think of your plans. Under the circumstances I do not see how they could be better. I imagine that the time will pass more quickly with me to be here than it would to be in W. while you are away and as long as I can not [*sic*] very well go back to W. much before Christmas any how I should think the time would go sooner for you if you have a change of scene and work. I hope you will not have to work as hard as you did before though."[54]

During this separation before the birth of their child, while commenting about a professional meeting he attended, Clara did not miss the opportunity to offer additional support for her decision to stay at home:

> "I am glad you are having such a good chance to see your friends from the different parts of the country. Why does not Prof. Simmonds [*sic*][55] attend the meetings? (I have forgotten how his name is spelled, but you know whom I mean.) It may be a good thing for you on one account,

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[48] Clara S. Harris to Gilbert D. Harris, August 28, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[49] Clara S. Harris to Gilbert D. Harris, September 10, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[50] Clara S. Harris to Gilbert D. Harris, August 23, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[51] Charles D. White, a former classmate of Harris' and later director of the U. S. Geological Survey.

[52] Clara S. Harris to Gilbert D. Harris, August 23, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[53] Clara S. Harris to Gilbert D. Harris, August 23, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[54] Clara S. Harris to Gilbert D. Harris, August 25, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[55] Frederick W. Simonds, with whom Harris worked in Arkansas in 1888 (Palmer, 1953c).

> that I am not in Washington just now. If I were I could not attend the receptions, . . . and for that reason I am afraid I might prevent you from going whenever you would like."[56]

At this time Harris and Dall were completing the final portions of their Neocene volume which was published in 1892. According to Palmer (1953c), in 1890–91 J. W. Powell, Director of the U.S.G.S., had given Dall the task of preparing a memoir on the Neocene [now called Neogene] deposits of the U. S., and Dall had assigned Harris part of the work. This was to be one of a series of "Correlation Papers" the Survey was producing which summarized the state of the stratigraphic knowledge at that time. Previous work had been published on the "Carboniferous and Devonian" (Williams, H. S., 1891), the work that led to the creation of the Mississippian and Pennsylvanian subdivisions of the Carboniferous strata in North America; "Cambrian" (Walcott, 1891); "Cretaceous" (White, 1891); and "Eocene" (Clark, 1891). The work on the Tertiary that Dall and Harris were doing was published as the "Correlation Papers: Neocene", (Dall and Harris, 1892). The division of labor is given in the introductory remarks in this paper:

> "As regards the division of labor between the senior and junior authors of this paper, it may be stated that the work of searching the literature and bringing together the scattered data relating to particular states or regions has been largely performed by Mr. Gilbert D. Harris. For the revisions and correlation of this material and for the whole of the chapters on Florida, British Columbia and Alaska, and the general discussions embodied in the essay, Mr. Dall is responsible. The list of formations, which, short as it is, has cost much labor and correspondence with authors who have proposed the names, has been prepared by Mr. Harris, who has prepared the chapter on the Interior regions." (Dall and Harris, 1892, p. 17).

Harris' chapter on the Interior region covered only pages 280–317, thus Dall prepared most of the manuscript, but Harris' labor was extensive and did not go unnoticed by Dall, or by G. K. Gilbert. In the *12th Annual Report*, Gilbert noted that Harris' contribution had been extensive and vital:

> "Much of the labor of compilation was performed by Mr. G. D. Harris, and the importance of his contribution has been recognized by giving place to his name on the title page as junior author." (Powell, 1891b, p. 64).

Gilbert repeated this praise in the 1893 report as well:

> "Dr. Dall was assisted in the work of literary compilation and in many other ways by Mr. Gilbert D. Harris, and this assistance proved of such importance to the successful prosecution of the work that he deemed it a matter of justice to associate Mr. Harris's name with his own on the title-page of the book." (Powell, 1893, p. 183).

The need for an extensive literature search evidently made an impression on Harris, however, for many of his subsequent works include a detailed literature review, *e.g.*, his paper on the Midway Stage (Harris, 1896a). Later as a teacher, he instilled the idea of a thorough literature search in his students, and they followed his model as can be seen, for example, in Maury (1925), Olsson (1934), and Palmer (1937).

Based on Clara's letter, Harris must have been quite busy trying to complete the final work on the Neocene volume and work on the Tertiary collections, all before he left for Arkansas. She wrote to him:

> "My dear you are trying to compress a good deal of work into a few weeks! I thought that you said your plan of arranging the Tertiary collection would take you several years but now you say Dr. Dall wants you to do it before you go away this fall."[57]

As the time of fatherhood drew closer, Harris seemed to have really taken the idea to heart and looked at parenting as a real partnership. Ever the organizer, he apparently set out a table of housekeeping duties he was to do for her:

> "After reading your letters I could not help but think how lucky I am. When I go back to Washington I shall have nothing to do but to fold my hands and enjoy myself because I shall have a husband 'to do my cook.' I hope you will become an expert at marketing. Your housekeeping program seems to be very good so far as it goes but I do not see any *dishwashing* [*sic*] number upon it. How about that part?" [Emphasis in the original.][58]

As to Harris' movements around this time, some letters help establish his whereabouts. A letter to Harris at the Smithsonian from Frederic Simonds about the Arkansas publication from the 1888–1889 work is dated September 17, 1891 and postmarked in Washington, D. C. on September 21st. Thus, in late September or early October, Harris must have gone to the Jamestown area to be with his wife during the last stages of her pregnancy and the birth of Rebecca Stoneman Harris, for her letters stop about this time and do not begin again until after the birth. Also in September, Harris published his fourth paper (Harris, 1891c).

The fact that Rebecca's birth on October 21, 1891, occurred in Ellicott seems to indicate that the couple stayed at his home. That is where the Harris family lived and where Gilbert himself had been born (Lopus and Ingham, 1977).

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[56] Clara S. Harris to Gilbert D. Harris, August 30, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[57] Clara S. Harris to Gilbert D. Harris, September 13, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[58] Clara S. Harris to Gilbert D. Harris, September 6, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

Harris must not have stayed with his wife and newly born daughter very long, however, as he received mail in Jamestown postmarked October 25th and October 26th, 1891, from two U.S.G.S. colleagues. The first was from T. W. Stanton, informing him that, "Dr. White was disposing of his library, . . .", and he said, also, "I hope you are enjoying your vacation." Stanton makes no mention of the fact that the real reason for Harris being in Jamestown, the birth of his daughter.[59] The second was from David White who did inquire about Mrs. Harris:

> "Why this silence for so long? What is the news? Neither Mr. Prosser nor I have had a line from you for a long time. . . . How is Mrs. Harris? When do you leave for Arkansas?"[60]

But on November 1, Stanton sent another letter about a book he had purchased for Harris. This one went to Little Rock, Arkansas, in care of J. C. Branner, who in turn forwarded it to Kingsland, Arkansas where Harris was headquartered in November.[61] Clara's letters were directed to him in Little Rock as well. In December one of her letters sent to Little Rock was re-directed to Cleveland County, so he must have been moving around.

From Clara's letters to him during his time in Arkansas it seems that once again, Harris was in poor health. The last time he worked in Arkansas he had also become quite ill. Despite all the ill health and work, however, he was writing to her almost every other day, and apparently he was not to stay in Arkansas very long:

> "I received your letter of the 12th [December 1891] on Friday and those of the 14th and 16th this . . . morning. . . . Letters are good in there [*sic*] place but I am so glad that the time is near at hand when they will not be necessary. . . .
>
> "They [his family] were somewhat worried I suppose because they have not heard from you since the letter saying that you were not well."[62]

The last surviving letter from Clara during his Arkansas activity is dated January 12, 1892 and in it Clara spoke of him delaying his departure, which, apparently, did not exactly please her:

> "Ma and Marian draw a long breath every time I get a letter and you still keep putting off the time for coming home. Not that they want you to stay away but they are afraid that every week you will be swooping down and carrying off 'Betty', as Ma calls Rebecca. She is just the dearest little girl and I do wish you could be here to watch her grow. I am afraid she will be 'a great big woman like her mother' by the time you come home."[63]

A letter from his sister, Floy[64], also sent to Little Rock, was dated January 17 and postmarked in Little Rock on January 20, 1892, so he was receiving mail in Arkansas during the closing weeks of January. A letter from his sister Ida dated March 3rd, however, was sent to their new residence at 1031, 8th Street, N.W. Washington, D.C. and the heading was, "Dear Brother and Sister,"[65] so they both must have been back in Washington, D. C. at that time.

Thus, Harris was in Arkansas from sometime in late October 1891 until late February or early March 1892, and he returned to Arkansas the following September:

> "The winter of 1891–92 was spent by the writer in southern Arkansas under the combined auspices of the United States and Arkansas Geological Surveys. The first part of September, 1892, was spent in reviewing work done along the Cretaceous-Tertiary boundary." (Harris, 1894b, p. 6).

In his report for 1891–1892, Dall gave these dates for the Arkansas work:

> "From September, 1891, to March, 1892, Mr. Harris cooperated with John C. Branner, State Geologist of Arkansas, in the Southeastern part of the State." (Powell, 1892, p. 143–144).

As described above, however, from dates and addresses on his letters, Harris must have spent part of that time in Jamestown to be with Clara at Rebecca's birth before going to Arkansas.

It was during these field activities in Arkansas during 1891 and 1892 that Harris did his first real work with Tertiary strata as he worked in a region south of the Arkansas River. He worked his way south all the way to the Louisiana state line and prepared a geologic map of the area (Palmer, 1953c). In the preface to the Arkansas report in which this work was published, J. C.

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[59] T. W. Stanton to Gilbert D. Harris, October 24, 1891. HA-PRI, Ithaca, NY.

[60] David White to Gilbert D. Harris, October 24, 1891, HA-PRI, Ithaca, NY.

[61] T. W. Stanton to Gilbert D. Harris, November 1, 1891. Stanton's letter was sent from Washington, D. C. to Little Rock, Arkansas and then forwarded to Kingsland. HA-PRI, Ithaca, NY.

[62] Clara S. Harris to Gilbert D. Harris, December 20, 1891. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[63] Clara S. Harris to Gilbert D. Harris, January 12, 1892. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[64] Floy Harris to Gilbert D. Harris January 17, 1892. Private collection, WRB; now at HA-PRI, Ithaca, NY.

[65] Ida Harris to Gilbert D. Harris March 3, 1892. Private collection, WRB; now at HA-PRI, Ithaca, NY.

Branner, Director of the Arkansas Geological Survey, described the significance of Harris' work:

> "The task undertaken by Professor Harris was not an easy one: the country with which he had to deal is one of low topographic relief and heavily timbered, the rock exposures that might otherwise have been expected are generally concealed by the disintegration and breaking down of the original beds, while the marked paucity of marine fossils throughout the entire region has added to the difficulty of the work. These obstacles, however, have been so well overcome that the present report, besides dealing with the general features and distribution of the Tertiary geology of the State south of the Arkansas River, brings out several new points of especial interest. Among other things Professor Harris has shown:
>
> 1. That the Midway beds of the Alabama section are the oldest of our Arkansas Tertiary rocks.
> 2. That the beds at Olsen's Switch, Pulaski county, from which *Enclimatoceras ulrichi* [a nautiloid] came are not Cretaceous but Tertiary.
> 3. That the Cretaceous beds, although not known at the surface, are penetrated by the wells at Beebe and Cabot.
> 4. That the Arkadelphia shales, referred by Hill to the Tertiary, are of Cretaceous age.
> 5. That the Cretaceous-Tertiary border from Arkadelphia southwest lies south of the St Louis, Iron Mountain and Southern Railway, and not north of it, as hitherto believed." (Harris, 1894b, p. XII–XIV).

The summer of 1892 found Harris back on the shores of Chesapeake Bay (Palmer, 1953c) (presumably leaving Rebecca and Clara in Washington). This is confirmed by Dall's report for 1891–1892; Harris was indeed back at the Maryland shore:

> "Mr. Harris paid a short visit to the localities in Maryland for the purpose of reviewing the sections made by Conrad nearly half a century ago, in which serious errors were suspected, and on inspection were actually found to exist." (Powell, 1892,p. 145).

Perhaps the errors Harris discovered the year before prompted this return visit. This work did not take him very long; as indicated in an earlier quotation from the Calvert Cliffs publication, he worked on the Chesapeake Bay shore from, May 23–June 1, 1892. And around the middle of June he received a letter dated June 13 which was sent to Washington, D. C.[66] The work along the Bay which Harris started in 1891 and completed in 1892 was published in 1893 as *The Tertiary Geology of Calvert Cliffs, Maryland* (Harris 1893a). He later used other portions of his observations in Maryland in general paper about the Eocene beds of Maryland and Virginia (Harris, 1894a).

But Harris' days with the U.S.G.S. were numbered, for the depression of 1892 forced the government to reduce staff and Harris was one of these casualties. Or, as Harris himself said, ". . . curtailment in the affairs of the federal survey necessitated employment elsewhere of the younger members of that organization" (Harris, 1919, p.3). Based on Dall's year-end report for 1892–93, dated July 1, 1893, Harris must have left the U.S.G.S. shortly after he returned from the Arkansas work:

> "The report on the Arkansas Tertiary fossils for the state survey was finished by Mr. Harris before he left Washington, forwarded to Little Rock, and, I am informed, will shortly be printed." (Powell, 1893, p. 257).

Harris may not have found the change entirely unwelcome. Druid Wilson, a former student of Harris', recalled Harris telling him, with regard to his relationship with Dall, that, "I [Harris] could not get along with him [Dall], so I decided to get along without him."[67] That feeling, however, did not keep the two men from continuing a professional relationship that appears to have bordered on friendship. In a short paper he did about some of Dall's interpretation of Conrad's publications (Dall, 1893a), Harris said this:

> "There are, to be sure, several unsettled points relating to this work [Conrad's], but, no one is more capable of dealing with them than is Dr. Dall." (Harris, 1893d, p. 280).

And in a later publication, Harris was even more effusive:

> "It is certainly fortunate for American Tertiary Paleontology that there has been at the National Museum a man of Dr. Dall's erudition and sympathetic interests." (Harris, 1919, p. 3).

Judging from the various letters from Dall to Harris found in the Harris Archive at PRI, they continued to correspond. Even toward the end of Dall's life, there was communication between the two men as evidenced by a letter from Dall, at age 75, to Harris in 1920 which certainly had a personal and friendly tone to it:

> "Why don't you come up to the mountain [in New Hampshire] sometime next summer and study the turkey tracks in the metamorphic schists? I say they are pseudomorphs of some kind of reed, but some of the petrologists claim they are after crystals. But I never heard of jointed crystals sometimes three feet long with regular branches. Anyhow come and see us."[68]

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[66] A letter June 13, 1892 from [illegible] on Geological Survey of Arkansas letterhead but dated Des Moines, Iowa sent to Gilbert D. Harris addressed to Washington, D.C. HA-PRI, Ithaca, NY. This letter was found folded inside the Arkansas Survey Report for 1892 at PRI.

[67] Personal communication July 12, 1995.

[68] William H. Dall to Gilbert D. Harris, June 24, 1920. HA-PRI, Ithaca, NY.

So, now with a young daughter as well as a wife, Harris found himself unemployed. Yet he was not without prospects. According to Harris, around this time he received a recommendation from C. D. Walcott, who was the Chief Paleontologist and later the Director of the U.S.G.S.:

> "In '92, during one of those pseudo-economic, or political paroxysms that formerly afflicted our federal Geological Survey, the writer, an employé of that organization, very naturally found it necessary to seek other quarters where his work in Tertiary Paleontology could be advantageously continued. Through a recommendation of Chief Paleontologist Walcott (now Secretary of The Smithsonian Institution) such a haven was found on the State Geological Survey of Texas,[69] then being ably administered by Mr. E. T. Dumble." (Harris, 1919, p. 3).[70]

Apparently that recommendation, plus his recent experience with the Arkansas Geological Survey, put Harris in Texas sometime in 1892 and part of 1893, ". . . as Tertiary paleontologist to the Geological [and Mineral] Survey of Texas during the years 1892 and 1893, . . ." (Harris, 1895a). As no letters have been located from Clara to him during this period of time, it is not known whether his new wife and daughter accompanied him to Texas or not, but most likely, as in previous separations, Clara and Rebecca returned to her home at Harmony, New York while he worked in Texas.

Given his successful work in Arkansas with Branner both in 1888 and in 1892, it would been logical for him to join the Arkansas Survey instead of the one in Texas. Funding problems, however, were plaguing Branner as well as his counterparts in Washington, but for a different reason:

> "Since the main reason for the re-establishment of the survey [in 1887] was to ascertain the potential for gold and silver in western Arkansas, it was essential that this be one of the investigations conducted. Dr. Branner's staff made an evaluation of the gold and silver prospects open at that time and showed that at least in case of the mines then open, there was no validity in claims being made about gold possibilities. This so irritated some people in the State that funding for the geological Survey was withdrawn, not to be re-established until 1923!" [Emphasis in the original.] (Anonymous, 1988, p. 21.).

They were angry for him "standing in the way" of progress and Branner was publicly castigated by members of the legislature. One angry mob of potential speculators and miners actually burned him in effigy (Brice, 1989). Thus, Harris embarked on a series of professional situations where his fate and the fate of his work would be in the hands of politicians.

Harris arrived in Texas late in 1892 and stayed until early 1893. While there, he was able to make comparisons between the fossils from Texas with ones in the collections in Washington, D.C. He continued to make more collections of his own as he travelled the coast on his trips between Texas and Washington. He found that the Paleocene Midwayan Stage extended well into Texas, as did the Eocene Lower Claibornian which had been described previously from Arkansas and Alabama (Palmer, 1953c). These discoveries, although seemingly minor today, were important pieces of stratigraphic information for unraveling the biological and geological history of the Coastal Plain, a study which would occupy Harris for the remainder of his career.

He returned to Texas again during the winter term of 1926–27, toward the end of his teaching career, but this time he went as a visiting professor at the University of Texas, invited there by his former student, Professor Francis L. Whitney (Palmer 1953c).[71]

In April 1891, a well was drilled near Galveston to a depth of just over 3000 feet and Harris had an opportunity to examine the samples from this deep hole. This work was briefly mentioned in the 4th Annual Report of the Texas Survey for 1892 (Harris, 1893b) and in a joint paper with E. T. Dumble (Dumble and Harris, 1893). Harris eventually produced a 400 page manuscript on the Tertiary geology and paleontology of Texas. The manuscript was clearly state-of-the-art for its time, but Harris experienced great difficulties getting it into print. According to Johansen (1988), at this point the entire Texas survey lost its funding. Apparently it was:

> ". . . the subject of a fight [no reason given] in the twenty-third Legislature and was denied funding by the governor in 1893." (Johansen, 1988, p. 410).

This condition of no funding continued until this Survey's official termination in 1901 when a new organization, the University of Texas Mineral Survey, was created. Harris' monograph, however, was not part of the new Survey's publishing agenda.

In a later publication of parts of the Texas monograph by the Academy of Natural Sciences of Philadelphia, Harris described the situation:

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[69] The full name at that time was the Geological and Mineral Survey of Texas (Johansen, 1988).

[70] In the Harris Archives is a small handwritten note, "as told oraly [*sic*] by Harris to Palmer, 8/46" which states, "Walcott suggested Harris for Texas Survey . . ." HA-PRI, Ithaca, NY.

[71] Annual Report by Heinrich Ries for 1926–27 states that Harris was on leave from January to March, 1927 to give lectures in Texas. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

> "While employed as Tertiary paleontologist to the Geological Survey of Texas during the years 1892 and 1893, the writer prepared a large monograph on the Tertiary mollusca of the State with the intention of publishing it in the 5th Annual Report of that Survey. For want of funds the printing of this report has been indefinitely postponed and accordingly the following facts and descriptions of new species, taken from the monograph in question, have here found an appropriate place for publication." (Harris, 1895a, p.45).

The State Geologist of Texas, E. T. Dumble, included some of the stratigraphic data from Harris' work in an 1893 paper in the *Journal of Geology* in which he stated that the report was based:

> ". . . partly on that of other members of the survey, and the paleontological studies of Cope, Harris, and Cragin, the details of which have been given in previous publications or will appear in the Fifth Annual Report of the Geological Survey." (Dumble, 1894, p. 549).

Later, in 1895, Harris published another piece of the monograph as No. 3 of volume 1 of the *Bulletins of American Paleontology*, "Neocene mollusca of Texas or fossils from the Deep Well at Galveston" (Harris, 1895c). Most of the manuscript, however, was never published. In 1937, Harris described the situation with these words:

> "Forty-four years ago the writer completed a monograph on the Tertiary Mollusca of Texas for the Geological Survey of that State. The plates illustrating the fauna were engraved and a few proof copies struck off; but the finances of the Survey seemed at that time scarcely ample to warrant immediate publication. The Survey was soon discontinued. Some of the new or otherwise interesting material of this monograph was excerpted and published in the Proceedings of the Philadelphia Academy (Nat. Sci.) for 1895, but the bulk of the material has remained unpublished to this day." (Harris, 1937a, Foreword dated April 10th, p. 3).

What was lost to the world of paleontology can be seen from a description Harris (1895c) gave of the table of contents of that typewritten monograph:

> "*Preliminary Remarks*, pp. 1–5.
>
> Part 1. *Brief review of the literature on the Tertiary mollusca of Texas*, pp. 6–21.
>
> Part 2. *Eocene mollusca of Texas*, pp. 22–352.—The name, author, synonymy, original description, additional remarks, all known localities for each species in Texas, important localities in other States, geological range, and where the type specimen may now be found.
>
> Addenda to Part 2. *New or interesting Eocene mollusca from other States*, pp. 353–357,
>
> Part 3. *Neocene mollusca of Texas, or Fossils from the Galveston deep well*, pp. 358–397.—The name, etc. as in Pt. 2, and the range in depth of each species.
>
> Part 4. *Definition and correlation of the marine Tertiary deposits of Texas*, pp. 398–409.—Section I. Review of the works and opinions of earlier writers. Sec. 2. Conclusions drawn from the present paleontological study.
>
> "The last mentioned part is followed by (1) a detail [sic] account of all the localities or stations whence the Tertiary fossils were obtained, (2) a table showing at a glance the geographical distribution of the Eocene molluscan species in Texas and their geological range in this State and others farther east, (3) a table showing the bathymetric distribution of the Galveston well fossils, pp. 410–434, and (4) 36 large octavo plates illustrating the species mentioned or described in Parts 2 and 3.
>
> "The article published by the Academy [of Natural Sciences of Philadelphia] contained the description of the new species of Part 2 and the figures belonging thereto; the majority of that part, and which alone is of present stratigraphic value, still remains in manuscript.
>
> "This Bulletin [Number 3] is practically a condensation of Part 3. It seems advisable that this unique material should no longer remain unpublished, for up to the date no other marine Neocene fossils are known from the Gulf slope west of Mississippi." (Harris, 1895c, p. 85).

Unfortunately, it appears that most of this manuscript no longer exists; only about 100 pages of the fossil descriptions survive in the Harris Archives at PRI.

Harris must not have spent all of 1893 in Texas, however, for it was in the spring of that year that he embarked on his first private publishing venture, working with a printing company in Washington, D. C. He must have spent at least some time in Washington to oversee the final stages of this project.

As he delved more deeply into the world of Tertiary fossils, Harris noted a scarcity of original copies of the early works describing these fossils, especially the works of Timothy Abbott Conrad[72] which had been published in the 1830s. In a footnote on page 5 of his reprint, Harris described the location of the 16 known copies in 1893. Especially bothersome was that their rarity made taking copies of Conrad's publications into the field out of the question. Harris therefore set out to remedy the situation, at least partially, by arranging a reprint of Conrad's *Fossil Shells of the Tertiary Formations of North America* (Conrad, 1832, 1833; Harris, 1893c). Harris stated the reason for undertaking such a venture in the Introduction to his reprint:

> "He who would become versed in the marine Tertiary geology and paleontology of this country must first of all have a thorough understanding of Conrad's FOSSIL SHELLS OF THE TERTIARY FORMATIONS OF

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[72] Timothy Abbott Conrad (1803–1877) was a famous pioneer paleontologist who is remembered especially for his work with Cenozoic fossils. See Wheeler (1935) for details of Conrad's life and work.

> NORTH AMERICA: it marks the beginning of systematic research into this period of our continent's history." (Harris, 1893c, p. 5).

Harris had 225 copies of the text and 200 copies of the illustrations re-printed at his own expense; he then sold copies, both in the U.S. and abroad, to recover the costs. The printing was done in April, 1893, and until November of that year the cost was $3.00, postpaid in the U.S., but after that date, the price was $3.50. This small advertisement was put in early editions of the *Bulletins of American Paleontology*:

> "A few copies of our reprint of Conrad's *Fossil Shells of the Tertiary Formations* still remain unsold. **Price:** $3.50.
> Address
> Gilbert D. Harris, Ithaca, N.Y.
> or,
> Wm. Wesley & Son, 28 Essex Street, Strand, London, England"[73]

He finally sold the last of these in the 1930s (Palmer, 1963). PRI re-issued this Conrad volume in 1963; it was still available in 1995.

Harris was not alone in reprinting Conrad's work. Also in 1893, Dall arranged to reprint some of Conrad's works (Dall 1893a, b). Harris published a short paper about Dall's work[74] with Conrad's publications (Harris, 1893d) pointing out some errors Dall had made in getting the proper publication dates for Conrad's works.

At the end of this small article Harris wrote: "Washington, D.C. February 25, 1893", and it starts with the words, "Upon my return to Washington from a sojourn in Texas, . . ."; thus by the end of February of 1893 he was back in Washington, D. C.[75] According to Palmer (1953c), Harris had returned to the Smithsonian to work on his own fossils.

But Harris' life was about to take another major twist. While he was exploring the rocks of southern Texas, his Alma Mater had experienced some major changes in its geology faculty. Henry S. Williams, who had studied at Yale and had been Harris' professor, had been asked by James Dana to return to Yale as his successor. This left no one at Cornell in paleontology, for Ralph S. Tarr, who came to the department in January 1892, was a physical geographer. To be sure, Tarr had worked with Permian rocks (Tarr, 1892) while employed with the same Geological and Mineral Survey of Texas as Harris, but paleontology was not his favorite part of geology. To remedy this situation, Cornell's President, Jacob Gould Schurman, approached Harris about joining the faculty there (Brice, 1989).

Based upon a letter from J.C. Branner to Harris a few months after he came to Cornell, it seems Schurman considered several other people, in addition to Harris, for the position. Interestingly enough, Harris gave Schurman a strong recommendation for one of the other candidates, Charles Prosser, who had been H. S. Williams' assistant when Harris did the extra year of graduate study before going to Arkansas the first time:

> "My dear Harris:
>
> "I am glad to see that the geol. dept. at Cornell is 'getting a move on.' . . .
>
> "As for the Texas work—what can you expect? In Ark. they block my work at every nook and corner, and in the meantime howl because the reports are not out. They make me sick." . . .
>
> "In order to set Prosser right in regard to your appointment at Cornell, I wrote him since I came back this fall telling him that I knew about your efforts in his behalf. When he replied it was evident that he didn't believe all I told him, altho [*sic*] he said he wished you all success and that sort of thing. He doesn't know how you stood up for him, and he won't believe it for my telling him about it."[76]

No doubt Harris received recommendations from J. C. Branner and others, and eventually he was offered the position as instructor ($1,000 per year) with possible promotion to assistant professor ($1,400–1,800 per year); this even though he had no teaching experience. Apparently Harris replied to Schurman's first offer with several questions and possibly some requests, one of which apparently was for an appointment as a Professor, not Instructor, of Paleontology. Schurman had these responses:

> "It is not likely, however, that we shall either now or in the near future appoint a full professor for this subject [paleontology], as we are desirous of giving greater prominence to geology proper."[77]

and 10 days later:

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[73] Printed inside the back cover of *Bulletins of American Paleontology*, No. 1 (May), 1895.

[74] Dall, William Healey, Determination of dates of publication of Conrad's *Fossils of the Tertiary Formation and Medial Tertiary*: Read before the Philosophical Society, November 12, 1892. This information on Dall's paper came from Harris, 1893d.

[75] An interesting note about his paper on Dall's Conrad material is that on all reprint copies found at PRI, someone, probably Harris, modified a word in the title, from "Collection" to "Collation." There must have been a typographical error in the printed title.

[76] Letter from J. C. Branner to Gilbert D. Harris, December 2, 1894. At this time Harris and his family were living at 60 Eddy Street. HA-PRI, Ithaca, NY.

[77] Jacob G. Schurman to Gilbert D. Harris, November 15, 1893. Jacob Gould Schurman Papers 3/4/6; Reel 8 (vol. 2, p. 43). RMC-KL, Cornell.

> "Instead of getting a professor of general geology, I think we are more likely to get a number of young men who will specialize as instructors or assistant professors in paleontology, mineralogy, petrography, physical geography and other divisions of the general subject. At present I do not know who the teachers will be in any of these branches; but I had thought of you for paleontology. Your letter, however, leaves me in uncertainty whether you desire such a position."[78]

A small handwritten note in the Harris Archives indicates that when he was first offered the position at the instructor rank, Harris said no, but he would come at the higher rank.[79] After this, Harris must have given a more positive response to the offer, but he asked for $1500. He indicated, however, that he would come for less money if he received the rank of assistant professor. In December of 1893 Schurman wrote to him:

> "After consultation with the Trustees, I have much pleasure in informing you that we have virtually appointed you assistant professor of Paleontology, for the usual term of three years, at the usual salary of $1400 a year. . . .
>
> "We propose to have three young men as assistant professors in the department. One will take Dynamic Geology and Physical Geography and probably also Economic Geology; the second, Paleontology, and the third, Mineralogy and Petrography. Each of these men is to be independent of the others; . . . your position would be that of assistant professor of Paleontology."[80]

The formal appointment by the Board of Trustees came in January 1894:

> "I congratulate you on the appointment; and am heartily glad that you are to continue at your Alma Mater the work so admirably done by Professor H. S. Williams."[81]

And so, by January 1894, Harris had secured an appointment to Cornell where he was to stay until his retirement in 1934 (Plate 2). Yet from the beginning a cloud was to be over his head, for one phrase in Schurman's letter quoted previously, "Each of these men is to be independent of the others; . . .", was to echo through McGraw Hall for well over 70 years. With that phrase, Schurman, perhaps unknowingly, created three separate departments where there had been one, and each of the three men interpreted Schurman's word "independent" as literally as possible.

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[78] Jacob G. Schurman to Gilbert D. Harris, November 25, 1893. Jacob Gould Schurman Papers 3/4/6; Reel 8 (vol. 2, p. 82). RMC-KL, Cornell.

[79] Handwritten note, "as told oraly [*sic*] by Harris to Palmer, 8/46." HA-PRI, Ithaca, NY.

[80] Jacob G. Schurman to Gilbert D. Harris, December 13, 1893. Jacob Gould Schurman Papers 3/4/6; Reel 8 (vol. 2, p. 122). RMC-KL, Cornell.

[81] Jacob G. Schurman to Gilbert D. Harris, January 13, 1894. Jacob Gould Schurman Papers 3/4/6; Reel 8 (vol. 2, p. 179). RMC-KL, Cornell.

CHAPTER 3. RETURN TO CORNELL

From its beginnings in 1868 under the leadership of Charles Frederic Hartt, paleontology was the major emphasis in geology at Cornell. By 1874, the original name, School of Geology, was changed to School of Geology and Paleontology, reflecting this emphasis. With Hartt's departure for Brazil in 1874, followed a year later by his assistant, Orville A. Derby, paleontology was given less emphasis in the department until Henry Shaler Williams joined the faculty in 1879. Williams once again put paleontology and stratigraphy into the forefront of research activities and teaching at Cornell. Even after the addition of mineralogy in 1887 when the name became School of Geology, Paleontology, and Mineralogy, paleontology was still a major part of the curriculum.

Upon the retirement of James Dana from Yale in 1892, H. S. Williams left Cornell to replace him and paleontology was de-emphasized once again, a condition that continued for several years because the Department had no paleontologist. Williams gave his reasons for leaving in a letter to C. K. Adams, President of Cornell:

> "I am requested to accept the Professorship of Geology in Yale college to succeed Professor J. D. Dana. This call from my 'Alma Mater,' accompanied with a personal invitation from Professor Dana, comes with a force difficult to resist."[1]

At about the time Williams was contemplating his departure, R. S. Tarr was hired[2] as a replacement for

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[1] Letter from H. S. Williams to C. K. Adams, March 23, 1892. Reproduced as part of the Cornell University Board of Trustees meeting minutes, June 15, 1892.

[2] Tarr was appointed Assistant Professor of Geology and Mineralogy for the balance of the 1891–92 academic year at a salary of $1000. There is no mention of his being placed in charge of the department; Cornell University Board of Trustees meeting minutes,

J. Francis Williams[3] (no relation to H. S. Williams) a young petrographer who, in 1891 at the age of 29, died expectedly from complications following an illness contracted while doing field work in Arkansas. But Tarr was only an acting assistant professor on an annual contract. While he was a capable scientist, Tarr was not a lover of fossils, nor was he a mineralogist and he made repeated requests to the administration for additional faculty. But nothing transpired until 1894 when two new assistant professors arrived; Adam Capen Gill to teach mineralogy and Harris to teach paleontology. There is no record that Tarr and Harris knew each other, except perhaps by reputation, even though they had worked with the Texas Survey at the same time. Harris was a member of one field party and Tarr was with another.

When these two new assistant professors were hired, Tarr's status changed from temporary to regular[4]. There is, however, no official record that Tarr was consulted about either of the two appointments although he had been acting as the unofficial head of the department since H. S. Williams left to go to Yale. In fact, one source suggests that Tarr actually had been appointed department head:

> "... [in 1891–92] Ralph Stockman Tarr was elected assistant professor of geology and *placed in charge of the department*, ..." [Emphasis added.] (Hewett, 1905, v. II, p. 235).

No official record of this has been found.

But Tarr's feelings can be determined from a hand written note found in the margin of a newspaper article announcing the arrival of the two new faculty members in which he indicated that these appointments will divide the department into three parts (Brice, 1989, p. 75), which is exactly what happened. For the 1894–95 academic year, the university budget lists three separate line items for the department, Dynamical Geology, Geological Mineralogy, and Paleontology (Brice, 1989, p.75). Thus, the department that Harris joined in 1894 was vastly different from the one in which he had studied eight years earlier.

Harris was mindful of the limitations of his experience in world geology, especially in the nature of the European type localities for the Tertiary, *i.e.*, the locations where the particular stratigraphic units were first described. So he had important items on his agenda before he took up his duties at Cornell: to see and study those original localities, to study museum collections, and obtain specimens for his own collection (Palmer 1953c).[5] This trip not only broadened his knowledge of European stratigraphy, but it served to introduce him to the paleontologists on that side of the Atlantic, and he was elected to membership in the *Société Géologique de France* (Palmer, 1953c). According to Harris' memorial in the Cornell Faculty Necrology (Herrick *et al.,* 1953), such memberships were not awarded lightly; the person had to be worthy of the honor, especially someone from the United States.

As he knew Williams' specialty was the Paleozoic and that Cornell's collection held little Tertiary material, Harris sought to increase the collection of Tertiary fossils in the department, and asked President Schurman for support. Schurman expressed his pleasure that Dall was donating a:

> "... duplicate set of Tertiary fossils ... [and Schurman was providing] ... $25 or so to pay for the selection of them; ..."[6]

It was also at about this time that Harris established a working relationship with James Dwight Dana at Yale. Just what prompted this connection or who initiated it is unknown, but it probably developed because of Harris' work with Dall and the U.S.G.S Neocene Correlation Project published in 1892. In any case, some time in 1893 or 1894, Harris worked with Dana on the Tertiary section of a new edition of Dana's enormously popular and influential *Manual of Geology* (Dana, 1895). Although Palmer (1953c) indicated that Harris traveled to New Haven to work in Dana's office, a letter from Dana indicates that they used the mails for communication as well. Dana comments on the work Harris had done:

> "I enclose herewith the plates from old number of the Proceedings of the Acad. N. Sci. Philad. which you very kindly sent me for the benefit of my book. The publishers having recently returned them to me.
>
> "The printing of the index now will bring the book to an end.

December 15, 1891. He was reappointed Assistant Professor of Geology for 1892–93, salary $1400; Trustee minutes, August 18, 1892; and Assistant professor of Geology and Paleontology for 1893–94, salary $1700; Trustee minutes, May 9, 1893.

[3] J. F. Williams was hired on June 9, 1891 and died on November 17, 1891; Cornell University Board of Trustees meeting minutes, June 9, 1891.

[4] He received a three year contract as an Assistant Professor of Dynamic Geology and Physical Geography, salary $1700; Cornell University Board of Trustees meeting minutes, January 9, 1894.

[5] In the Foreword to a later publication, Harris said "After collecting fossils in France and England in 1894. . ." (Harris, 1937a, p. 3)

[6] Jacob G. Schurman to Gilbert D. Harris, February 8, 1864. Jacob Gould Schurman Papers; 3/4/6; Reel 8 (vol.2, p. 245). RMC-KL, Cornell.

> "I thank you again for all your kindness and greatly valued favor.
>
> "You noticed that in one point I did not follow your ms—that is in the use of the word epoch in connection with the subdivisions other than those of the Atlantic and Mexican Gulf borders. My reason was that the *time for continent* is covered by one series of epochs, or should be: after one series is recognized and established by *fossils* for without fossils, a series of beds cannot represent any time division satisfactorily. The great purpose of study is the correlation of the beds of other regions with those so recognized, in order to give unity to the history. Several sets of epochs formulate this purpose. You know that Prof. W. B. Clarke named the N.J. Tertiary subdivisions as epochs; and made a hodge-poge of the matter, as the 1st and 2nd [illegible] belong together, and perhaps also the Clay Marls below; and the 3d [illegible] has not fossils enough to fix its equivalency. The Clay marl stratum is worse off as to fossils.
>
> "I have written this that you may have my reason for the divergence from you." [emphasis in original][7]

As Dana died in April, 1895, this edition was his final work (Williams, H. S., 1895). According to Williams' memorial for Dana, he was confined to New Haven during the last few months of his life while he was working on this fourth edition, so if they were to work together, in person, then Harris would have been the one to do the traveling.

In the preface, Dana acknowledged Harris' assistance:

> ". . . and the Tertiary, as regards the Invertebrates, to PROFESSOR G. D. HARRIS. . . . and that with regard to the marine Tertiary of the country was chiefly written for its place by PROFESSOR HARRIS." [Capitalization in the original.] (Dana, 1895, p. 4).

The Tertiary section in Dana's book runs from page 879 to 939, and Harris not only assisted with the writing, but he also drew several fossil plates found on pages 896 and 897, and described many species found in the fossil lists for the Eocene.

This collaboration must have been quite a boost for Harris, for the fact that he was able to work with James Dana, arguably the preeminent geologist of his time, certainly indicated that he had already made a reputation as a Tertiary paleontologist. The *Manual* was a very important book, described by Williams has having:

> ". . . done more to unify and codify American geology than any other work, and until very recent years, if we may judge from their literary quotations, foreign geologists have made Dana's *Manual* their chief source of information regarding the geology of America. . . . [This last edition provides] a complete account of the state of the science at the time of its publication." (Williams, H. S., 1895, p. 620).

PRINTER AND PUBLISHER

That first year at Cornell, 1894–95, was certainly a busy one for Harris, for along with the trip to Europe and the work for Dana, Harris was preparing for a new career as a teacher. He also launched what would become a major preoccupation for the rest of his life. Harris had become quite frustrated in his dealing with government agencies over publication delays—or in the case of his Yorktown manuscript and his Texas monograph, lack of publication—of his own work in paleontology. Encouraged by his earlier success with the Conrad reprint venture, Harris became convinced that there was a need for a completely new, scientific journal devoted exclusively to paleontology. With that in mind, on May 25th, 1895, Harris published issue one, volume one of the *Bulletins of American Paleontology*. His new journal was devoted exclusively to stratigraphy and paleontology, and Harris was willing to publish papers that were quite long, often encompassing a single issue, which was a novel idea for scientific journals at the time.[8] In 1995 the *Bulletins* reached the 100th year of publication, making it the oldest journal in the western hemisphere devoted exclusively to paleontology[9], and it is among the three or four oldest such publications in the world.

Harris not only founded and published the *Bulletins*, but he printed them on his own platen press in the third-floor "tower room," off the gallery in the central section of McGraw Hall at Cornell. The first issue of the *Bulletins* appeared under the imprint: "Harris and Stoneman" (using his wife's maiden name); "Harris Company" appeared on issue number four. Over time the imprint became "The Harris Company," which remained on all issues until Volume 20 in 1932, when it was replaced by the imprint of the Paleontological Research Institution (PRI), the organization Harris founded that same year. With its founding, PRI became the publisher of the *Bulletins*, a role that continues to the present day. It was well Harris had somewhere else for his printing operation because the vibration was causing some problems in McGraw Hall and the University wanted it moved:

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[7] Letter from James Dwight Dana to Gilbert D. Harris, November 26, 1894. No envelope accompanies the letter, so Harris' location at the time Dana wrote him is unknown, but it is assumed he was in Ithaca. HA-PRI, Ithaca, NY.

[8] The journal today continues Harris' innovative policy of having a single issue devoted to one paper when appropriate.

[9] The next oldest in the U.S. is the *Journal of Paleontology*. According to the "NOTICE TO MICROPALEONTOLOGISTS" signed by J. J. Galloway, the first editor, and dated December 14, 1926, "Plans are now nearly complete for beginning the publication of the *Journal of Paleontology*, which was founded by the Section of Paleontology of the American Association of Petroleum Geologists." Actual publication began in 1927. HA-PRI, Ithaca, NY.

> "The 'powers' also feel that your printing press in the tower room on the third floor is an unsafe load, and would appreciate it if you can move it to some other place. Mr. Van Blarcom says that they will move it to any place that you may designate without expense to yourself."[10]

On the back cover of Volume 1, Number 1, dated May 25, 1895, Harris wrote:

> "ANNOUNCEMENT
>
> These Bulletins will appear when suitable material is prepared for them and not necessarily at regular intervals. They will not represent work done by one person or institution[11] but will be of a more general nature subject to acceptable contributions from all paleontological workers. They will, we believe, serve as a receptacle for articles too technical or long for the ordinary monthly periodicals and too important to admit a delay from one to an indefinite number of years in a government printing office. Moreover, the desirability of amassing articles relating to one branch of knowledge in one publication, must be evident to all."

This announcement reveals Harris's experiences with long publication delays in government printing offices from his days with the U.S.G.S. and the Geological Surveys of Arkansas and Texas. He alluded to the problem again in Number 3 of Volume 1 (Harris, 1895c), in the paper about the Galveston Deep Well fossils, and he summarized the contents of his large Tertiary fossil monograph that had been "in press" for several years, but at that time had still not appeared.[12]

Also, the organization of his own publishing company gave him the ability to reprint classic works in paleontology as he had done earlier with the Conrad reprint. In his reprint of the paleontological writings of Thomas Say[13] Harris explained why he felt compelled to do these reprints:

> "For several years we have been endeavoring to decide upon the most feasible plan for rendering the paleontological literature of America, especially that from 1800 to 1860, more accessible to young students. . . . All digests, adaptations or condensations of works dealing with the systematic side of natural history have seemed but delusions, and fraught with grave dangers; for, what two persons would cull out the same passages as worthy of going into a digest of an author's writings!—the author alone knew just what he wanted to say and how to say it.
>
> "Surely, no scholar will ever rest contented with an abridged form of any author's works; he must have the real thing. But if the real thing is beyond his means and there are no magnificent libraries to which he had access, what is he to do? There seems to be but one really satisfactory solution to the difficulty, *viz.*, a republication of each author's work, exactly as he wrote and punctuated it, word for word, line for line, page for page, and plate for plate, regardless of the publication in which it first appeared.
>
> ". . . Doubtless some will believe that it is means thrown away to republish these short and seemingly unimportant articles [by Say]. Yet we believe such not to be the case. More than once have our European co-workers overlooked Say's original description of *Exogyra* and credited the genus to Sowerby, too often has Say's work on 'Crinoidea' been forgotten. . . .
>
> ". . . The humble task of republication . . . can point out the way in which the study of paleontology can be forwarded . . . by making its literature accessible, at a very modest cost, in a most convenient form . . ." (Harris, 1896b, p. 273–274).

In 1921, Harris brought out a reprint of the paleontological writings of Robert J. L. Guppy (Harris, 1921).[14] This tradition was continued by Harris' successor as editor of the *Bulletins*, Katherine V. W. Palmer.

Originally the cost of the *Bulletins* was one dollar per one hundred pages, "strictly in advance." Harris must have tried to attract some advertising as well, for inside the front cover of issue Number one is an announcement for *The Nautilus*, a journal published by the Academy of Natural Sciences in Philadelphia. As he had recently published a paper in their proceedings (Harris, 1895a), however, he might not have charged for the space. The notice did not appear in the second issue.

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[10] Heinrich Ries to G. D. Harris, October 15, 1934. Heinrich Ries Papers, 15/15/691, Box 1, File 1-24. RMC-KL, Cornell.

[11] These remarks probably concern James Dana's *American Journal of Science*, published at Yale University, and the *Journal of Geology*, published at the University of Chicago.

[12] As mentioned earlier, parts of the Texas manuscript were published by both Harris (1895a) and the Texas State Geologist, Edwin T. Dumble (1894), but most of it was never published. A small portion of the original manuscript is in the Harris Archives at PRI.

[13] Thomas Say (1787–1834) was a self-taught naturalist who was a charter member of the Academy of Natural Sciences of Philadelphia. He was a friend and co-worker of William Maclure (who produced one of the earliest geologic maps of the U.S.), and in 1816 he wrote the first paper by an American about American shells. Say did major works in conchology (6 volumes) and entomology (3 volumes). (*Dictionary of Scientific Biography*, v. XIV, p. 132–134).

[14] Robert John Lechmere Guppy (b. London 1836-d. Port of Spain 1916), trained as a civil engineer, settled in Trinidad in 1859 after traveling in Australia (Tasmania) and New Zealand. He wrote almost 100 papers on the geology of Trinidad and the West Indies (Guppy, 1907). Shortly before his death, Carlotta Maury, a former Harris student, mounted her expedition to San Domingo in 1916. In a letter to Harris, Guppy indicated he was hoping to hear something of the "Maury Expedition." R. J. Lechmere Guppy to Gilbert D. Harris, April 18, 1916. HA-PRI, Ithaca, NY.

Irregular publication was certainly the case with the early issues of the *Bulletins*; the five issues of Volume 1 appeared between May 25, 1895, and December 7, 1896. Being his own publisher, furthermore, reduced the possibility that unfavorable comments from a peer review would stop or delay publication—and in the early volumes, Harris' own writings predominate (Harris, 1895b,c; 1896a). He did, however, make an effort to attract other authors, for in June of 1896, *Science* carried a small note[15]:

> "A prize of $50 is offered by the editor of the Bulletins of American Paleontology, Prof. G. D. Harris, of Cornell University, for a monograph suitable for publication in the bulletins; it must be presented before May 1, 1897." (June 19, 1896)

At some point, another Cornell faculty member took a leaf from the Harris book and formed a printing company. In the Harris Archives is a large undated envelop with an advertisement on it for a publication from "The Comstock Publishing Company, Ithaca, New York." The publication is "The Moth and Butterfly Outlines", and this company was created by John H. Comstock, Professor of Entomology, who was a contemporary of Harris' (but no relation to the Comstock who was in the Geology Department in the 1870s). Perhaps Comstock saw "The Harris Company" success and attempted to develop a similar enterprise, but this is the only reference I have ever seen to 'The Comstock Company."

There was also an advantage for students that Harris owned his own scientific journal. His major philosophy of teaching was to allow students to learn by doing actual research, and the final product of such activity was (and is) to put the work before colleagues in the field by the publication of the results. Edward M. Kindle, a student at Cornell during Harris' second year of teaching, was the first to benefit from this arrangement. His Master's Degree thesis, a study of Devonian stratigraphy and paleontology in the Ithaca area, was published in the *Bulletins* (Kindle, 1896), the first of many student theses to be printed in a Harris publication (*e.g.*, Sheldon, 1916; Hodson, F., 1926; Weisbord, 1926; Schoonover, 1941). A measure of the quality of this first student author can be seen in the fact that Kindle was a geologically multi-talented student, for the same year in which he published his work on the Devonian strata and fossils of the Ithaca area, he went to Greenland as a member of Professor Tarr's 1896 expedition to study glacial activity there (Brice, 1989).

Later, when Harris had his field camp in the Helderbergs near Albany, New York, other students were also able to see the result of their labors in print. Herdman F. Cleland (later a professor at Williams College) discovered a previously undescribed fossil fauna in the limestones of the Mohawk Valley, and this work was published in the *Bulletins* (Cleland, 1900, 1903), The 1900 field camp was the first of several for Percy E. Raymond (who the following year was a graduate student at Yale and later had a distinguished career at Harvard), and he, too, published on material gathered while attending Harris' field camp (Raymond, 1902, 1903). Harris had high esteem for Raymond: "Mr Raymond, by natural instinct a geologist before he ever came to Cornell."[16]

Apparently not everyone at Cornell appreciated Harris being able to publish student work in his journal, and the objections must have reached the Cornell administration. In 1913, Harris responded to Ernest Merritt, Dean of the Graduate School:

> ". . . in general it seems to me, that any Professor is in a way more or less responsible financially for the publication of this [*sic*] thesis by students under his direction. . . . Some I have heard of, have been published by publications having considerable means at their disposal, would cost the student not less than $1500. Any such drain on the ordinary student's finance [for] the cost of a very unremunerative career of study, would seem to me disastrous. . . . Naturally, so far as my own department is concerned, I look out after the publication myself for the subjects are usually Paleontological and can be made to fit in as one of my Bulletins of American Paleontology. Naturally many of us are wishing that our University could have a press of its own wherein things might be published, serving thus as a means of exchange and as it were a legitimate means of advertising our research work. However, naturally, I am getting along without such University support in a very satisfactory manner."[17]

The perceived lack of support by the University, alluded to in the last sentence, was to continue to trouble Harris for many years.

By 1916, Harris had become dissatisfied with the coverage and the small (octavo) size of the *Bulletins* and felt the need for another series of larger size. He therefore began *Palæontographica Americana*, a quarto sized monographic series, 21 years after he began the *Bulletins*.[18] This larger-format publication was to emphasize more detailed, systematic papers on invertebrate paleontology. Most importantly, given the larger format, the illustrations could be larger. With his new journal, Harris followed the European tradition for publications of this type in both name and size, *e.g., Palæontographica Italica* (1895) and *Palæontographica* (German, 1851).

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[15] A similar notice was printed in the *American Journal of Science*, 4th Series, v. 2, pp. 85–86.

[16] *Annual Report to the President of Cornell University of the Department of Paleontology and Stratigraphic Geology*, May 15, 1901, by Gilbert D. Harris, p. 5. HA-PRI, Ithaca, NY.

[17] Unsigned carbon copy, Gilbert D. Harris to Ernest Merritt, December 8, 1913. HA-PRI, Ithaca, NY.

Harris' introduction to the first issue of *Palæontographica Americana* also gives a rare insight into his views of both the role of paleontological research and publication in studies of organic evolution, and the place he believed his publications would assume in the history of American paleontology:

> "Several years ago we commenced a series of papers in 'Bulletins of American Paleontology,' dealing with the molluscan remains in the various horizons of our southern Tertiaries. In these the subject matter is treated stratigraphically; in other words, the Midway stage was first taken up, then the Lignitic, and now the Claiborne is in press.[19] Other papers dealing with special localities or horizons have also been published. In future numbers we hope to discuss all important Tertiary horizons stratigraphically. This seems the natural way for all investigation of this preliminary nature. Witness for example Hall's works on the paleontology of New York as well as the paleontological matter included in our various state survey reports. Such papers if printed in small octavo form are convenient for field use as well as laboratory study.
>
> "But as years pass by and the faunas of the various horizons are better understood, and vast amounts of material collect in our museums, there comes a time when a purely biologic phase of investigation may be advantageously undertaken. Note for example the more recent works of Clarke and Ruedemann of the New York survey. This calls for a larger sized publication, admitting plates of sufficient dimensions to contain for comparison representatives of many closely allied types of life. And, the large size page will be found not inconvenient in laboratory and museum where desks and tables are at hand; in the field, a work arranged biologically would scarcely ever be called for. Accordingly, this new work has been begun to receive such papers on invertebrate paleontology as are arranged systematically, papers that will be of direct assistance to students of biologic evolution.
>
> "The first of these papers, unpretentious and seemingly easy of preparation, has cost the author a vast amount of study here and elsewhere to make sure that no serious omissions of specific or varietal forms have been made either in the text or plates, and that the figures and text indicate clearly the characteristic features of each form discussed.
>
> Paleontology Laboratory G. D. Harris
> Cornell University
> October 30, 1916" (Sheldon, 1916, p. 3)

That first issue was a good example of what Harris was trying to accomplish. For her Ph.D. thesis, Pearl Sheldon did a massive study of bivalve mollusks of the ark family, and her work was chosen for the inaugural issue (Sheldon, 1916).

Shortly after Harris' death in 1952, Katherine V. W. Palmer, in response to an inquiry from someone at Ward's Natural Science Establishment, described Harris' publication efforts:

> "'As to the Bulletins, I am enclosing the most recent list so that you may gain an idea of the scope and number that have been published. You will note that he started them in 1895, printing the publications on his own platen press. This he had up in the tower room on the balcony floor of McGraw Hall. He had a typesetter there who set the copy in monotype. Later, in the middle 20's he got a cylinder press on which he could print a signature of 16 pages. This [cylinder press] he had in the basement of his home at 126 Kelvin Place . . . In 1936–37 when we added the second unit to the building of the Paleontological Research Institution, the two presses were moved to the basement of that unit, where the small press remains [1953]. Prof. Harris printed until 1949. That would have been Bulletin 134.
>
> "'Previous to the founding of the Journal of Paleontology in 1927, the Bulletins of American Paleontology were the only publication in America devoted entirely to paleontology. Prof. Harris founded the Bulletins to print his own publications and to help his students publish their theses and papers. By the means which he used, he could reduce the cost of publication so that this could be done. He started in 1917 [actual date of printing] the quarto series, Palaeontographica Americana, a series for monographs of special subjects. Since there were similar series in England, Germany and Italy, this is the series in America of the same standard. This naturally has not had as many numbers published. We have now [1953] in press No. 25, which will be a monograph on *Venericardia*.'" (Anonymous, 1953, p. 49).

The Paleontological Research Institution continues to publish both journals.

Harris had a special interest in the illustrations used in paleontological publications. As mentioned above, he had shown talent as an illustrator at an early age and he contributed several illustrations to Dana's *Manual of Geology*; he also made many of the skillfully executed drawings of fossils for the reports on the Arkansas Tertiary in 1894, and for several other folios. Now with his own journal series he had an opportunity to pursue this interest with great vigor and determination. Many drawings of fossil mollusks found in the early volumes of the *Bulletins* were drawn by his hand. Thus, he was not only editor, frequent contributor, publisher, and printer, but the chief illustrator as well. When photographic illustrations replaced ink drawings, Harris perfected methods developed by H. S. Williams for coating fossils with sal ammoniac (ammonium chloride) to bring out details in the photographs. In addition, in his pursuit of clarity for illustrations, Harris experimented with other photographic techniques using glass negatives and copper plates. Palmer (1953a) indicated that he also experimented with collotype engraving for a few issues:

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[18] Although the title page of the first issue carries the year 1916, on the *Errata* page at the end, Harris says the actual date of publication was January 31, 1917.

[19] Harris did this with the following publications: Midway (Paleocene), *Bulletins* No. 4, 1896; the Lignitic (Wilcox, Sabine), *Bulletins*, Nos. 9, 1897, 11, 1899; Claiborne (Lower and Gosport Sand), *Bulletins* No. 13, 1919, and others on this unit, *Bulletins* 32, 1937 (Palmer); and *Bulletins* No. 117, 1946–47 (Harris and Palmer).

> "I believe the word Collotype is used sometimes generically to include most all of the gelatin processes but, as I understand this process is differentiated from the Heliotype largely by the fact that the so-called gelatin skin remains attached to a thick plate glass and is not removed, placed upon pewter, or fixed for a roller in the process of printing."[20]

His demand for the highest possible quality in all illustrations in his journals is a legacy continued by PRI today as they continue to publish both the *Bulletins* and *Palæontographica Americana*. In fact, no better indication of his emphasis on illustrations can be found than in the complete title, which is seldom used, of this second journal: *Palæontographica Americana-Illustrated Contributions to the Invertebrate Paleontology of America*.

TEACHER

As a teacher, Harris is best remembered for his graduate students and their individual research projects. He was less than effective in large classes, for he had a tendency to speak softly and often off to the side rather than toward the class [21]. One former student remembers Harris as a "wonderfully poor" teacher who did not have any set method of instruction, had a poor delivery, and was seldom prepared. It was not uncommon for Harris to arrive for class with the lantern slides he was going to use wet from the developing process.[22] But despite his apparent lack of preparation and poor lecturing style, Harris did reach the undergraduate student and communicated his enthusiasm and his love for geology. John L. Rich remembered his first encounter with Harris with these words:

> "I first came under the influence of Professor Harris in the year 1903–04 when I took his elementary course in Historical Geology and found a slumbering interest in rocks and fossils fanned to a flame."[23]

In advanced classes, however, Harris was more at ease. He and his students would frequently sit around a table full of mollusks and Harris would describe each one; no lecture, as such, just him talking about the fossils.[24] This was in keeping with his feeling that:

> ". . . far away things and mere principals [*sic*] do not appeal to the young mind as near at hand concrete objects and facts."[25]

For advanced students this technique was clearly inspirational. As Kenneth Caster (A.B. '29, M.S. '31, Ph.D. '33), later of the University of Cincinnati, commented many years later, Harris taught "more by precept than rote or formality," and he treated students as (paraphrasing the motto of Sigma Xi, the scientific research honor society) ". . . zealous companions in research" (Caster, 1973). John Rich, also later at the University of Cincinnati, said that Harris' students:

> ". . . remember especially the stimulus which came from his own active pursuit of scientific studies, his strong personal interest in them [the students], and his habit of assigning to them responsibilities which might ordinarily be considered to be beyond the capacities of students in their earlier years."[26]

One measure of his ability as a teacher lies in the success of his students. To date, more of Harris' students have been awarded paleontology's highest honor in the United States, the Paleontological Society Medal, than any other single professor (Schram, 1992). Three of his students have been so honored: Katherine V. W. Palmer (1972) (the first woman awardee), John W. Wells (1974), and Kenneth E. Caster (1976). For Schram, such success was derived directly from the mentor:

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[20] Unsigned carbon copy, Gilbert D. Harris to Paul Bartsch, December 8, 1913. HA-PRI, Ithaca, NY.

[21] Katherine V. W. Palmer, personal communication, July 28, 1982.

[22] Personal communication, John W. Wells, July 15, 1982.

[23] John L. Rich to Axel A. Olsson, February 21, 1953. HA-PRI, Ithaca, NY.

[24] Personal communication, Dr. John W. Wells, July 15, 1982. Wells served as Harris' graduate assistant about one year after he came to Cornell in 1928 (Brice *et al.*, 1995).

[25] Unsigned carbon copy, Gilbert D. Harris to Edward M. Tuttle, May 30, 1913. HA-PRI, Ithaca, NY.

[26] John L. Rich to Axel A. Olsson, February 21, 1953. HA-PRI, Ithaca, NY.

> ". . . when memories were recalled among the paleontological elite it was not of courses or field trips taken, but precepts learned. The learning was by example and direct transfer in a collaborative situation rather than as a teacher down to his students. . . . in his own acceptance speech (1977) Caster said, 'Harris stimulated his students to great endeavor and when a student won his largely intuitive approval he was treated as an equal, whether or not he was mature or experienced enough to merit this equation.'" (Schram, 1992, p. 473).

The closest thing to a teaching philosophy Harris ever committed to paper was included in one of his Annual Reports; it is short, simple, and goes right to the heart of his approach:

> "The main object for which this department exists, is to furnish students with the opportunity of learning geology in the most natural and efficient manner."[27]

As Palmer put it, however, he was not willing to work with just any student, only those who had a deep desire, sense of devotion, and the necessary discipline for the demanding tasks before them:

> "He was determined but kind. He had no interest for the indifferent student but for those who were capable and energetic, he provided opportunity and stimulation to encourage their interest in geological subjects." (Palmer, 1953c, p. 20)

For Harris, the best teaching took place in a field situation because it was in the field that he felt the greatest learning took place:

> "From the lessons of our own experiences, as well as from the lives of others, we are led irresistibly to the conclusion that the most natural way of acquiring a knowledge of the earth is to be associated in Nature's Laboratory—the field—with some experienced person who is carrying on original investigations."[28]

And one of Harris' favorite field locations was Yawger's Woods, near Union Springs, New York, which is one of the oldest known fossil localities in the Devonian rocks of New York (Plate 8). The site was noted by DeWitt Clinton as early as 1810, and it has been a very popular location to study the densely fossiliferous Oriskany Sandstone ever since. Harris would take the students by boat to the northern end of Cayuga Lake and then they would hike the three or four miles to the outcrop. After making their collections and observations, they would have a pleasant lunch among the rocks and then hike back to Union Springs, making various geological stops along the way. At Union Springs they would board the steamer for the return trip to Ithaca. The questions his students had to answer while on these trips are equally appropriate for today's student:

> "6. Are the banks of the Inlet of soft or hard rock? 20. What are bedding-planes? Joints? 32. Note three classes of animals in the Hamilton shale."[29]

In his approach to learning, Harris seemed to echo the methods of Louis Agassiz, who was so influential in the founding of the Department of Geology at Cornell, and Charles Frederic Hartt, the first professor of Geology at Cornell and a former student of Agassiz (Brice, 1989, 1994b). Like Agassiz, Harris's emphasis was not on the mass memorization of facts, but on the clear and careful amassing of knowledge and understanding of the earth by using the facts. Harris communicated to his students his own great love of learning through example and not by lecture. Like Hartt, Harris showed great enthusiasm for other languages (he once took a course in Sanskrit). Harris also was continuing and using the style of paleontological investigation he learned from H. S. Williams, his professor at Cornell. Williams was a strong advocate of very careful and meticulous collecting from every few centimeters of a section, if possible; a technique which requires much patience and time (Cleland, 1918). The importance of patient, careful study was passed along from Williams via Harris to a new generation of students, who in turn have passed this torch to others.

Harris expected his students, graduate and undergraduate alike, to do professional work almost from their first day of class with him. In his 1901 Annual Report to the President, Harris described his approach with these words:

> "This department has always maintained that the highest grade of teaching is not the rule-of-thumb, text book, didactic lecture work so commonly in vogue in schools, colleges and even universities; it consists rather of saying little, but surrounding the student by the atmosphere of the subject, by taking him in partnership, as it were, in the subject, by attempting to cultivate independence of thought in him at the earliest possible date; in other words, make him work along with his instructor, make of him a scholarly investigator and not a mere student. . . .
>
> "The underlying principle of all true University work must be original investigation. . . . The beginning students

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[27] *Annual Report of the Department of Paleontology and Stratigraphic Geology*; 1899–1900, p. 3, by G. D. Harris. HA-PRI, Ithaca, NY.

[28] *Annual Report of the Department of Paleontology and Stratigraphic Geology*; 1899–1900, p. 3, by G. D. Harris. HA-PRI, Ithaca, NY.

[29] Excerpts from: "Excursions for classes. Two free ones on lake and one by rail to Union Springs or Chemung Narrows, Fall of 1903". Printed list of questions students should answer. HA-PRI,Ithaca, NY.

> are taken into the field and shown a little and required to find out a great deal more. The same principle holds good in our lecture room and laboratory."[30]

Collecting fossils on a field trip was only the beginning; the samples had to be carefully cleaned, identified, and labeled. If anything new or unusual resulted from the study, the students were expected to write about it. Harris encouraged them to publish their results, and with the *Bulletins* he was able to publish the best of what they produced. Harris' ability and willingness to publish the work of students was highly unusual among his contemporaries and would be so even today, and it gave his students an early start as original investigators in paleontological research. Those who continued doing research in paleontology knew that Harris would always be willing to read, if not publish, their results. In this way, Harris gained the steadfast loyalty and devotion of his students that endured to the end of his days and beyond:

> "Those . . . who were his students . . . , realize they were guided by a master's hand, . . ." (Olsson, 1954, p. 128).

Arthur C. Veatch, who came to Cornell in 1898 as a transfer student from Indiana University, was one of Harris' most successful students. Although Veatch's work was not strictly in paleontology, he does provide an example of this loyalty and devotion. Although he did not receive a degree from Cornell, he worked with Harris in his field camps and was Harris' Assistant Geologist on the Louisiana Geological Survey at the age of 21; having served on the Indiana University Geologic Survey at age 19. In 1907, Veatch was attached to President Theodore Roosevelt's office as a special commissioner to study mining laws and mineral-land administration in New Zealand and Australia. The result of this work was the development of the Land Classification Board under the U. S. Geological Survey, with Veatch as the chairman. Later, he was involved in the famous Elk Hills case in California that eventually reached the U.S. Supreme Court and resulted in the legal definition of petroleum as a mineral.[31] This was not his first trip to the courtroom for the U. S. government. In 1908, Veatch was involved in a case in Wyoming in which it was shown, for the first time in a court of law, that geological evidence could be used to prove the presence of underground coal beds that were not visible on the surface (Veatch, 1907). He was among the first to use echo-sounding devices to construct bathymetric charts of high accuracy. He worked on a joint two-year project, with the Geological Society of America and the Coast and Geodetic Survey, in which the continental shelf was mapped from Chesapeake Bay to a point one hundred miles east of Cape Cod, an area of more than fifty thousand square miles. The mapping (Veatch and Smith, 1939) indicated an intricate drainage pattern on the continental shelf that Veatch felt was due to former subaerial erosion. A revealing story about Veatch's character is that while doing a traverse in Africa, he extended his line right through a herd of Cape buffalo. He claimed that it would have taken too long to go around, so he went through them (Heroy, 1942). After the swamps of Louisiana, what were a few buffalo? With regard to his work in Louisiana, Harris too remarked about his daring:

> ". . . especially during the early years of reconnaissance when young Veatch's (A. C.) delight in difficult and successful exploits brought in splendid material from hitherto unheard of localities." (Harris, 1919, pp. 3–4).

Veatch, also, published several important papers related to oil exploration, *e.g.*, Evolution of the Congo Basin (1935).

Veatch was, perhaps, the most financially successful of Harris's students. By age 41 he was Director of the Exploration Department of Sinclair Consolidated Oil Corporation and he was always a strong supporter of Harris and his paleontology at Cornell. In 1915, while in London, Veatch sent a check for $1,000 to Cornell to create a fund "by an anonymous donor,"

> "Which fund shall be available as to principal and interest for any purpose or purposes which in the sole discretion of Professor Gilbert D. Harris shall be of assistance to students of geology.
>
> "Payments shall be made from the fund to Professor Harris as and when requested and no accounts shall be required beyond simple receipts from Professor Harris saying that the sum or sums he may request from time to time have been received and that they are to be expended for purposes which in his opinion will be of assistance to a student or students of geology as the case may be.
>
> "If it is not possible for you to accept a gift with these provisions, please return the cheque to me."[32]

In the accompanying letter, Veatch said of Harris:

> "I may perhaps explain that it has been my privilege to

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[30] *Annual Report to the President of Cornell University of the Department of Paleontology and Stratigraphic Geology* by Gilbert D. Harris; May 15, 1901, p. 1,3. HA-PRI, Ithaca, NY.

[31] United States v. Southern Pacific Company *et al.*: Number 179; argued March 5,6, 1919-decided November 17, 1919. Case Adjudged in the Supreme Court of the United States at the October Term 1919. Citation courtesy of Ms. Ann McGee, Librarian, Widner Law School, Harrisburg, Pennsylvania.

[32] Letter from A. C. Veatch to Cornell University Treasurer, October 25, 1915. Copy in HA-PRI, Ithaca, NY.

> attend courses at three [other universities], and at none of these have I known of any man who so fully as Professor Harris had the real training and development of his students at heart or who to so extreme a degree of unselfishness lived only for their good and the advancement of Science. . . .
>
> "I have had many men through my hands coming from all the larger institutions in the United States as well as a number from Europe, and I can unhesitatingly say that no one is able to train real field geologists and investigators as opposed to mere lecturers on geology, as he, because the real University atmosphere, in contradistinction to that characterizing a college or high school, is more fully realized and more thoroughly pervades Professor Harris' laboratory than any other geological laboratory of which I have any knowledge." (Anonymous, 1915a).

This was written about 10 years after he left Cornell to make his way in the world with the skills and knowledge he gained while in the company of his mentor, Professor Harris.

And well he did make his way in the world. Unfortunately Veatch's wife, Caroline Hornbrook (neeé Evans), did not share her husband's allegiance to Cornell or to Harris' PRI, and when she died in June, 1985, her estate of approximately $20 million was left to the North American Unitarian Universalist Association.[33] And all this from someone who started by identifying fossils on the fourth floor of McGraw Hall with G. D. Harris, collected samples around the shores of Cayuga Lake and fought mosquitos in the swamps of Louisiana!

WOMEN STUDENTS

Another aspect of Harris's relationship with students that was atypical of his times was his strong encouragement of female students. At a time when women were not encouraged to pursue higher education, or much formal education at all, and were especially discouraged from pursuing science, Harris actively supported their endeavors in paleontology. Years later one of his former students remembered Harris:

> "I went to Cornell for two years after my graduation from Mount Holyoke College, and received my Master's [*sic*] degree. My Master's thesis was under the direction of G. D. Harris, who was the ONLY one in the department who felt kindly toward women. My original idea had been a thesis in Structural Geology under Charles M. Nevin but he flatly refused to have a woman. Altho [*sic*] a few months later, when I had already begun with Harris, he did change his mind." [Emphasis in the original.][34]

Cornell University, as a whole, had an enlightened policy of admitting women, and from the very first days of the geology department photographs of field trips show that women were enrolled in general geology classes. It was the first college in the eastern United States to admit women along with men (1872); provide scholarships specifically for women (1884); and the first to award the Doctor of Science degree to a woman (1895) (Conable, 1977). According to Charlotte Conable's book, *Women at Cornell-The Myth of Equal Education*, however, reality did not match policy (Conable, 1977). She speaks, for example, of how the male fraternities made it a point to exclude female Cornell students from all parties. Jill Ker Conway echoes these conditions:

> "At Cornell, the tension between the men and women was symbolized by the decision of male fraternities to ban any fraternity brother seen fraternizing with the Cornell women at Sage College." (Conway, 1994, pg. 239).

Their analysis is certainly supported by a comment in O. D. von Engeln's handwritten *Reminiscences*, prepared when he was in his 83rd year. In speaking about his days as a student at Cornell during the first decade of the Twentieth Century, von Engeln said:

> "Coeds [at Cornell] were frowned upon and had no part in any social events, for these [events] females were imported, the nearest source was Wells College [an all women's college in Aurora, New York]."[35]

In light of this, Harris' policy of including women among his students went very much against the tenor of the times, and he was the first member of the Department to accept women as graduate students. Even in the 1930s, 1940s, and 1950s some faculty in the Department still refused to admit women for graduate work with them. All through the 1930s and 1940s when the Department held its geological field camp at Spruce Creek, Pennsylvania, no women were allowed to attend because the facilities were less than appropriate to house both men and women, as everyone slept in one room on the second floor (Brice, 1989). In contrast, in 1900 Harris had women at his field camp using tents. Although these were probably less than adequate, at least everyone did not sleep in the same tent. But the use of tents is a story which will come later.

This departmental attitude of excluding women seems to have extended to faculty positions as well; the first female member of the Cornell geology faculty above the rank of research assistant, lecturer, or instructor was Teresa E. Jordan, who was named an

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[33] *New York Times*, June 16, 1985, Section A, p. 28.

[34] Letter from Caroline Heminway Kierstead to William R. Brice, October 26, 1983. HA-PRI, Ithaca, NY.

[35] Page 198, *Reminiscences*, by O. D. von Engeln. Von Engeln Papers, 14/15/856, Box 1, Files 1-44, 1-45. RMC-KL, Cornell.

Assistant Professor in 1983. This fact seems quite surprising, given the department's tendency to hire its own students (as witness Harris, J. Burfoot, C. Nevin, S. Cole, J. Wells, and L. Brown). The quality of the women students was certainly good, for many of them went on to work with various companies and to hold faculty positions at other universities and colleges. Here are career summaries for three, of many, from the early days who became quite successful geologists and teachers of geology:

> Carlotta Joaquina Maury (Ph.B.'96, Ph.D.'02) worked with Royal Dutch Shell Petroleum Company as a consulting paleontologist for many years, and also worked with O. A. Derby[36] in Brazil. She lectured at Barnard College from 1909–1912; was on the faculty at Huguenot College, Cape Town, South Africa from 1912–1915, and organized her own expedition to the Dominican Republic in 1916 after receiving the Sarah Berliner Fellowship in the biological sciences. She served as the official paleontologist for Brazil from 1914 until her death in 1938 (Ogilive, 1986, pp. 131–132).
>
> Katherine Van Winkle Palmer (Ph.D. '25) was Director of the Paleontological Research Institution from 1951 to 1978, and during those years served as editor of the *Bulletins of American Paleontology* and of *Palaeontographica Americana*. She was awarded the Paleontological Society Medal in 1972—the first woman to be so honored.
>
> Caroline Heminway Kierstead (M.A. '28) was a paleontologist with Shell Oil and a professor of geology at Smith College. She retired in 1969.[37]

Why Harris was so supportive of women remains a mystery; he left no comments or explanations on the subject. Perhaps this support had an economic basis because in that time women were paid less than men; he could, therefore, hire more assistants for the same outlay of salary money. Perhaps he felt that women were better suited to the precise and exacting work required in paleontology. Or perhaps, and I would like to think this was the reason, he was sensitive to the aspirations and abilities of women. Perhaps it was because he had several sisters, two of whom were college graduates; he also had a sister-in-law with a D.Sc. His wife, Clara, was certainly a strong person in her own right, and their only child was a daughter and a Cornell graduate. Although in a letter to Heinrich Ries, Harris did present a slightly different attitude towards at least one former female student, Carlotta Maury (about whom more will be said later), he was otherwise universally supportive of women scientists under his tutelage. The letter to Ries was part of a request for funds to purchase Maury's "European collection of Oligocene Tertiary shells . . ." Harris indicated that she spent, ". . . one year and . . . about $600 . . ." Then he went on:

> "I do not want to insult the lady, but it seems to me that in so much as she could not collect at the same advantage as the men could, that if she really wants to sell her collection, she might part with it for some such consideration as $200, at least I would like the privilege of making some such suggestion to her and see what the results would be."[38]

Whatever his motivation for encouraging the women students, paleontology in particular and geology in general were greatly advanced as a result of Harris' acceptance of women graduate students. Perhaps it was Harris's example that made it possible for women to do graduate work with other colleagues. For example, Georgianna Duncan Conant (M.A. '28), who later worked for many years with the U.S.G.S., did her thesis under Dr. Charles Nevin (the same professor who refused to have Caroline H. Kierstead as a student); she also assisted Dr. Heinrich Ries with his molding sands experiments. She was co-author of a paper originating from this work, and edited a revision of Ries's engineering geology text (Brice, 1989).

FIELD CAMPS AND BOATS

One of the most colorful aspects of Harris's teaching at Cornell was his use of boats for field trip transportation and to travel to field sites. Automobile and bus travel were unknown when Harris launched the first of his fleet and most travel was by horse and wagon or train; all were used for student field trips. But because of Ithaca's location on Cayuga Lake, Harris decided that travel by water was better. Not only could the parties get from one place to another easily, but often the shorelines had good rock exposures—not unlike today's highway cuts. For many years, Harris made extensive use of waterways and boats for both teaching and research, and in this he was following in the footsteps of one of his predecessors, Theodore Comstock. Comstock started the tradition of a summer school at Cornell with geology classes in summer of 1876 which had a base camp in a mountainous region ". . . illustrating geological science." (Brice, 1989, pp. 30–31). The following summer, 1877, Comstock took students by chartered steamer on a geological trip along the coasts of the Great Lakes.

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[36] Orville A. Derby (B.S.'73, M.S.'74) 1851–1915; student and colleague of Charles Frederic Hartt at Cornell and worked with Hartt on the Imperial Geological Survey of Brazil 1875–1878; later director of the first Federal Geological Survey of Brazil, 1906–1915.

[37] Personal communication, October 26, 1983.

[38] Gilbert D. Harris to Heinrich Ries, November 8, 1915. Heinrich Ries Papers, 14/15/691, Box 1, File 1-24. RMC-KL, Cornell.

Harris already had the option of using the excursion steamboats that were in operation on Cayuga Lake: the *Frontenac* made her maiden voyage on June 4, 1870, and in 1901 the *Iroquois* and the *Mohawk* joined her on the lake, making quite a flotilla. These were large boats—the *Frontenac* was 135 feet long with a twenty-foot beam and had room for 350 passengers—and although they were fine for taking students to regular stops such as Taughannock Falls, on the west side of Cayuga Lake, or Union Springs, on the east side, Harris felt he needed transportation he could control, making stops whenever and wherever he wished. He sought assistance from the University, and a report in *Science* (Anonymous, 1897; Harris, 1897a) erroneously suggested that the Cornell Trustees were assisting Harris with the construction cost of his first boat *Ianthina*, but the entire $1100.00 came from his own pocket, as did the cost of them all.[39] To appreciate fully how much Harris was investing in this boat, it is useful to note that just a few years earlier he had been hired by Cornell as an Assistant Professor at a salary of $1400 per year! So he was spending an amount almost equal to his annual salary.

The first boat, *Ianthina* (Plate 7), built in 1897 by Lintz and Company of Grand Rapids, Michigan (Harris, 1897a), was named after a mollusk—a practice Harris continued with all his boats. *Ianthina* was shipped by rail from Grand Rapids to Ithaca and launched into Cayuga Inlet in early 1897. She was forty feet long, had a nine-foot beam, and was equipped with both a propeller and a large paddle wheel. The paddle wheel did not prove very useful, though, and was soon removed. *Ianthina* was powered by a two-cycle, six-horsepower gasoline engine that could push the craft along at six miles per hour. *Ianthina* had a "trunk" cabin with six cots and an upper deck used as an observation platform.

The boat was barely in the water before Harris and a small band of students "motored" for Chesapeake Bay and the Carolinas. Among the students who made the trip in the summer of 1897 were Edgar R. Cumings (geology graduate student '97), the "engineer" as he was called, Thomas A. Caine (A.B. '86); and George C. Martin (B.S. '98). For Martin, this trip to Maryland was a harbinger of things to come, for later the Maryland Geological Survey called upon him to prepare the gastropod section of its Miocene volume (Clarke *et al.*, 1904). Despite numerous mishaps on the journey and problems with the paddle wheel, *Ianthina* proved its worth as a means of transportation. The samples the group collected were eventually described by Harris and a student in 1919:

> ". . . material collected by members of the first cruise of the *Ianthina* in Virginian waters in 1897." (Van Winkle and Harris, 1919, p. 6).

Harris was so pleased with the launch that he extolled her virtues in a letter to the editor of *Science*, dated November 5, 1897. He described the first trip, which was a long voyage from Ithaca to lower Chesapeake Bay and return, via the Erie Canal, Hudson River, Raritan River and Canal, Delaware River, Delaware and Chesapeake Canal, Chesapeake Bay and its many inflowing rivers. He also spoke of why he preferred the gasoline-powered launch to one powered by steam:

> "1. Cost—(a) Any well constructed boat 30 feet long, with a 6-horse power gasoline engine will run 800 miles on two barrels of oil; cost about $9.00 on an average, i.e., a little over a cent a mile; (b) while on government waters no licensed engineer or pilot is required. With a few days practice, under the direction of one acquainted with the engine, one learns his engine thoroughly and can as easily go up the Potomac to Washington as navigate his own mill-pond.
>
> "2. Freedom from government inspection.
>
> "3. There being no boiler or fire, the boat is light, roomy and cool.
>
> "4. When stopping at an outcrop no gasoline is being used. The whole machine is at a standstill, dead. But to start up and get under full speed requires less than a minute."

He closed with:

> "Suffice it to say that in a country like our own, well traveled by water ways, a marine laboratory capable of rapid locomotion, at an exceedingly small cost, seems a very desirable adjunct to true university work in natural history subjects." (Harris, G. D., 1897b, pp. 703–704)

Of course, if surviving photographs are any indication, there were times when Harris and his crew had to resort to using a sail, but this information he did not include in his letter to the editor. He also refrained from mentioning the many hours of "tinkering" required to repair damage and breakdowns. Harris' daughter, Rebecca was quoted as saying:

> "My father may not always have used accepted tools or methods but he could make machinery work." (Kiersch, 1964)

Soon *Ianthina* was joined by a faster launch which, because of her narrow form, was christened *Orthoceras*, after the long and slender fossil nautiloid. The new boat was not as costly as *Ianthina*, but just how much it cost is difficult to determine for Harris left conflicting references. In the letter to Ries in May 28, 1929, Harris indicated that $600 was required to get her built and launched. In one of his Annual Reports written just after she was built, however, Harris listed a different figure:

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[39] The cost of the boats comes from a letter Harris wrote on May 28, 1929 to Professor Heinrich Ries, Head of the Department of Geology at Cornell. (H. Ries Papers, #14/15/691, Box 1, File 1-24, RMC-KL-Cornell.) But in an earlier report, Harris gives a slightly different cost for the first *Orthoceras* as indicated in a later paragraph.

> "My large boat *Ianthina* proving too heavy for rapid transit. I bought a much lighter boat last spring, of torpedo model, for $400.00, christening it *Orthoceras*, and in it placed my old engine. This left my old boat with no power. I have just bought a 12 H.P. double cylinder engine for the *Orthoceras* and will reinstall the old engine in the old boat. For this summer's use, then, besides rowboats, I shall have my light and very swift boat and a large, heavy boat for great loads and large classes. Without these additions to my summer work no such complete and sweeping superiority could be claimed for our school over all rivals. They are just what turns the tide in our favor."[40]

This light "torpedo" boat was 5 feet wide but 30 feet long (2.5 × 9.5 meters), and the double cylinder 12 horsepower engine could drive *Orthoceras* at 12 miles per hour (20 kph). This launch was to act as a tender for assisting and towing the larger and heavier *Ianthina*. According to a report in 1902, Harris had both boats in operation by 1899:

> "The first [field camp] trip was in 1899. Professor Harris took five men in one of his launches . . ." (Smith, 1902, p. 396) [Note the use of the plural, "launches."]

Also in his Annual Report for 1899–1901, Harris said:

> "We have built a launch [*Ianthina*] for promoting field investigation in southern waters; we have reconstructed the same for better service in waters nearer by, and now have just purchased a much finer launch [*Orthoceras*], one that will still better serve the purpose we have in view."[41]

Thus, *Orthoceras* must have been purchased sometime in late 1898 or early 1899 and Harris had the "fleet" he needed for the summer work. Certainly by the summer of 1900, both boats were in operation because there was this brief reference in *Science* June 1, 1900 (even though *Orthoceras* was not a *steam* launch):

> "Professor Harris, of the department of geology, Cornell University, will take a class with the steam launch the *Orthoceras* to Lake Champlain for geological work." (*Science* N.S., v. 11, no. 283).

According to the published announcement (Anonymous, N.D.) for what appears to be the 1902 field camp (no date is on the pamphlet, but the class list for the 1901 camp is the last one included in the announcement), both boats were still in operation or at least expected to be in operation for the summer of 1902. John Rich recalled that *Ianthina*, and presumably *Orthoceras* as well, was in operation when he came to Cornell in 1903–04:

> "One feature of Professor Harris' instruction which helped arouse my interest as well as that of many others was the institution of Saturday geological excursions on the Harris launch, Ianthina, to various points of interest along the shores of Cayuga Lake. In the summer of 1904, Professor Harris took a group of us, including F. L. Whitney, Leopold Reinecke, of South Africa, and Joviano Pachecho[42], of Brazil, on a longer trip on his fast launch [*Orthoceras*] from Ithaca down Cayuga Lake and thence along the Erie Canal to the neighborhood of Albany, where we were joined by a larger group of students for two weeks camping and geological scouting in the Helderberg Mountains."[43]

About that time or shortly afterward, however, a boat house fire destroyed both boats. This was no doubt a devastating loss for Harris, but, to date, no record has been found as to how this disaster affected him or his programs, nor has the exact date of the fire been determined.

Not to be stopped by the fire, Harris had *Orthoceras II* (cost $500.00) constructed to carry on the field activity for the last few years that the field camp existed. In 1905 Harris attempted to sell "a launch" to Cornell;[44] which one is not known. Also, there seems to have been another boat between the time of the fire and 1914 that has not been mentioned in any of the Harris memorials:

> "You remember how we studied and worked over the engine of our boat 'Prexy' and you said that in case it ever ran you would like to know what means I used to get it started again. You remember there seemed to be imperfect compression so I purchased some brand new piston rings and put them in in [*sic*] place of the ones which we spread out last year , [*sic*] and there was no difficulty in starting

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[40] *Annual Report to the President of Cornell University of the Department of Paleontology and Stratigraphic Geology*, by Gilbert D. Harris; May 15, 1901, p. 5. HA-PRI, Ithaca, NY.

[41] *Annual Report of the Department of Paleontology and Stratigraphic Geology;* 1899–1900 by G. D. Harris, p. 4. HA-PRI, Ithaca, NY.

[42] Joviano Augusto d'Amaral Pacheco (Cornell University A.B. '04) worked with Harris in the Helderberg Field Camp and with the Louisiana Geological Survey. Later he was part of the Brazilian Geologic Survey.

[43] John L. Rich to Axel Olsson, February 21, 1953. HA-PRI, Ithaca, NY.

[44] A notation about not wanting to sell any of the Paleontology collection, nor wishing to purchase Harris' launch. Cornell University Trustees meeting minutes, December 5, 1905.

> the engine and it has run splendidly ever since. This I did but a few weeks ago, not having time all last summer to touch it."[45]

This is the only reference to *Prexy* found in the Harris Archive and nothing is known about her size, etc., or her final disposition. *Prexy*, however, must have been another boat because that name does not seem to be a familiar or shortened form of *Orthoceras*, nor is it the same as *Pecten* or *Pecky*, the name of a small dinghy Harris owned at the same time as *Ecphora*. Also, one would not expect a dinghy to have an engine in it. So, it appears that Harris had yet another boat after losing the first two in the boat house fire.

HELDERBERG FIELD CAMP

The very first summer Harris was at Cornell, he was out in the field, and he had received funding for expenses from the Cornell Board of Trustees:

> "In the spring of 1895 the Trustees of Cornell University generously appropriated the sum of $400 to be expended in geological and paleontological research in the Tertiaries of our Gulf and Atlantic coast states. This sum was for defraying the field expenses of the writer and one assistant who were to volunteer their services during the following summer vacation in the field specified. Accordingly Mr. W. S. Hubbard[46] and the writer left Ithaca in the latter part of June, and after visiting west Tennessee, northern and central Mississippi, central Alabama and Western Georgia, returned North in the latter part of August. . . .
>
> 'It is scarcely necessary to say that during the summer season in the south it is often extremely warm, and trying to one's health; and the writer, as well at the University at large, is deeply indebted to the skill, strength, good-will and never-tiring zeal of Mr. W. S. Hubbard." (Harris, 1896a, pg 119–120).

The next summer, he and Hubbard were back out in the field with the Trustees granting him another $400.00, this time to return to the Gulf and Atlantic coasts (Harris, 1897c). The fact that Hubbard, who was not even a geology student (Anonymous, 1908), would spend two summers doing field work with Harris is a good illustration of the influence he had with students, even non-geology ones.

But very soon Harris' summer activity was much more organized and involved more students. As indicated earlier, Harris' involvement with summer field camps (Brice, 1994a, 1995) also followed a Cornell Geology Department tradition started by Professor Theodore Comstock in 1876 (Brice, 1989, p. 30). Harris appeared to have been motivated by two factors. First was his desire to instruct students in techniques of field geology:

> "The Helderberg School of Field Geology is the outgrowth of a strong desire of the Department of Paleontology and Stratigraphic Geology at Cornell University to teach geology in the most practical, natural and efficient way at the least possible expense to the student." (Anonymous, N.D., First page, but no page numbers printed).

These phrases are quite similar to what Harris used in his Annual Report for 1899–1900, the same year that the major field camp effort began, and these ideas seem to be central to his teaching.

Secondly, Harris became the "Geologist-in-Charge"[47] for the Louisiana Geologic Survey in 1898 and needed to change his teaching schedule to free part of his year to work in Louisiana. Given the Ithaca winters, Harris chose to spend that season in Louisiana, and his classes were held during the fall and summer months to fulfill his teaching obligation to the University. According to a card Harris printed[48], he was in Louisiana from December 15 until March 15, and then at Cornell from March 15 to December 15; away from Ithaca just long enough to miss the worst of the winter weather. While he was head of the Survey in Louisiana, Cornell paid Harris $1500.00 while his colleagues were receiving $3000.00[49]. Even though he was in Louisiana only three months a year, there was, no doubt, Survey business to conduct while he was in Ithaca. It took him a year or so to get this "winter-off-for-summer work" arrangement approved[50]:

> "We have, finally, exchanged the winter term of our year for the summer, and have established a school of practical geology in eastern New York, in the heart of the most classic geological country of the continent."[51]

The field camp was an efficient way for Harris to attend simultaneously to his duties as Geologist in

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[45] Unsigned carbon copy, Gilbert D. Harris to F. L. Whitney, May 11, 1914. HA-PRI, Ithaca, NY.

[46] Walter Stacy Hubbard was at Cornell 1882–85 and 1894–96. He was not a geology student and received a Bachelor of Letters in 1895. He died in Buffalo, New York June 6, 1908.

[47] Title on a printed card prepared by Harris which includes A. C. Veatch, Assistant State Geologist. HA-PRI, Ithaca, NY.

[48] HA-PRI, Ithaca, NY.

[49] Letter from President Schurman of Cornell to H. Ries, Head, Department of Geology, May 28, 1915 (Ries Papers, #14/15/691, Box 1, File 1-22; Budget request from H. Ries to President Schurman, May 29, 1915. RMC-KL, Cornell.

[50] Harris gained official approval to take a winter vacation and do equal work-time after the close of the regular spring term; Cornell University Trustee meeting minutes for November 1, 1899.

[51] Page 4 of the "Annual Report of the Department of Paleontology and Stratigraphic Geology; 1899–1900" by G. D. Harris. HA-PRI, Ithaca, NY.

Charge of the Louisiana Geological Survey, meet his teaching obligation, and provide a marvelous educational experience for the students. Consistent with his philosophy of teaching, he felt that:

> "To have knowledge, then, at first hand of New York's type sections, must necessarily be the ambition of every young and true student of geology." (Anonymous, N.D. p. 2).

In addition to the regular college students, Harris also welcomed secondary school teachers to his camp and modified the course of study to fit their particular needs. In the prospectus describing the planned 1902 field camp program Harris put in a special section directed toward the secondary teachers:

> "To the high school teacher to whom falls the lot of teaching the sequence of formations, their characteristics and fossils, without having at command his own fossils, or drawings and photographs, of his own make, of Trenton, Oriskany and Niagara falls; the Adirondack, Catskill and Helderberg mountains; and the thousand and one little objects and sketches that go to fill up and vivify bare textbook outlines-no longer is pity nor tolerance due, since the means are now at hand for gaining the requisite knowledge and material at a very small expense." (Anonymous, N.D., p. 2).

That small expense amounted to about $75.00 for the summer: this included university tuition of $25.00, fees for tents and cots set at $10.00, the various side excursions cost an additional $10.00, and living expenses of about $3.00 per week. For that investment, students could take as many as 10 credits depending on how much time was spent in the field activities. The course ran from June 26 until September 4, with a concurrent six-credit, six-week session from July 7–August 16. Later in the 1930s when the Department began another field camp, this time in the valley-and-ridge region of central Pennsylvania, the cost was $150.00, which included $60.00 for tuition.[52]

Harris' great concern for the education and training of secondary teachers clearly went beyond the field camp activities, for in a course description he prepared for "Course 25", he explained what he hoped they would really learn:

> "The object of the course will be to show how the geology of a region is actually worked out, mapped and reported upon. It is felt that a teacher, in order to fully realize his or her opportunities in teaching geology, should be able to work out systematically and carefully the geology of the region where the teaching is to be done. Take away the pleasure and stimulus of local, 'near-at-home' references and the subject becomes tedious to teacher and pupil."[53]

LIFE IN THE CAMP

The Harris field camps were unconventional in many ways. Using the boats certainly made them different (Harris, 1900), as did his encouragement of the secondary teachers, and he continued to encourage women students. Lillian B. Sage[54] not only attended the 1900 field camp, but she returned the following year as an instructor. The letterhead stationery Harris printed for the 1901 field camp had a map on it showing the camp location and the excursion routs marked with a red line. Also the staff list included, "L. B. Sage, *Methods in Mapping*." The letterhead itself is interesting in the way Harris included the University:

"HELDERBERG SCHOOL
OF
FIELD GEOLOGY

Under the auspices of the
Department of Paleontology and
Stratigraphic Geology of
CORNELL UNIVERSITY."[55]

According to the pamphlet describing the proposed 1902 program (Anonymous, N.D.), after 1899 the number of women students increased, *e.g.*, 4 of 15 in 1900 and 14 of 27 in the 1901 camp. In 1901, two of the women are listed as Mrs., and according to the department records (Brice, 1989), not all of the women were school teachers; several were geology students studying at Cornell and other universities such as Mount Holyoke and the University of Michigan. By contrast, the information prepared for another department field camp begun in 1930 specified, "Registration is limited to men."[56] because the living facilities were "not adequate." This seems a very weak excuse, for the tent facilities Harris used 30 years earlier were far from ideal, and yet he happily welcomed women students to his camp.

As mentioned above, the living quarters for the field camp consisted mostly of tents furnished by the department:

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[52] Draft of field camp announcement, no date, but assumed to be for the summer of 1931. Ries Papers, #14/13/691, Box 2, File 2-8; RMC-KL, Cornell.

[53] From "Information Regarding Courses 21 and 25" [no date, but assumed to be c. 1900 for A. C. Veatch and Percy Raymond were the assistants]. HA-PRI, Ithaca, NY.

[54] Lillian Belle Sage (A.B. '01). By 1905 she was a teacher in Brooklyn, New York (Hewett, 1905, v. 4, p. 475).

[55] Letterhead stationery with a partly colored map showing the excursions for 1901. HA-PRI, Ithaca, NY.

[56] Draft of field camp announcement. Ries Papers, #14/13/691, Box 2, File 2-8. RMC-KL, Cornell.

> "For summer expenses, mostly for camp equipment, the appropriation of $500.00 has been made by the executive committee. The money will be used, but the equipment will last for a number of seasons."[57]

The camp had:

> ". . . (1) a large assembly tent, (2) a tent or building for drawing and laboratory work, books, museum specimens, instruments, etc., (3) a space set aside for preparing the rations of each mess [meal], and (4) 25 wall tents, with two cots in each, for the accommodation of 50 persons." (Anonymous, N.D., p. 4).

The "museum" portion included a set of labeled fossils from each of the sections the students would be examining.

The students were divided into different parties according to their background and given tasks appropriate for their capability. Those with experience went directly to the various mapping projects, while the less experienced students had 10 days of intensive lectures in addition to the material they were expected to read before attending the camp. One suggested reference was Dana's *Geological Story Briefly Told* . . . (Dana, 1875). As with all good geological camps, when the field work began, it began in earnest, and echoing H. S. Williams, the students were told that the best way to measure and investigate a stratigraphic section was:

> "By commencing at the base of the mountain, and collecting from each and every bed until the top is reached, the student has then in his possession material from which it is possible to construct a geological section of the region." (Anonymous, N.D., p. 6).

With such strenuous activities, meals take on added importance, and in this camp the students were their own cooks:

> "Questions are often asked as to how food is provided and served in camp. This, however, is a simple matter. Camp is divided usually into messes [meal groups] of about four to eight congenial souls each. A few cooking utensils are bought and some supplies ordered from a nearby village store. The honors of purchasing, cooking and caring for the culinary property of each mess are divided as equally as may be among its various members. Here comes in play "natural selection", "survival of the fittest", etc. Sufficient heat is furnished by camp fires or oil stoves. The services of a hired "chef" have thus far been done away with, tho' [*sic*] no complaint could be made if a mess should decide to employ such a person." (Anonymous, N.D., pp. 7–8).

Sleeping accommodations were cots supplied by the university, but students were directed to bring, ". . . two sheets and six blankets . . ." They were cautioned to keep their belongings to a minimum and to bring only old clothes suitable for summer work out-of-doors:

> "It is a serious impediment to work to be clothed too heavily, or to have to be ever on the alert to keep from soiling one's clothes." (Anonymous, N.D., p. 8).

While the evenings were to be filled with the usual field camp tasks, such as drafting sections, working on samples, etc., Harris did set aside time for lectures at least twice a week. These lectures, prepared by the advanced students, were illustrated by lantern slides, but no mention is made as to how the lantern slide projector was powered. Perhaps these truly were "lantern" slides. After the close of an evening's activity, the students frequently gathered around the camp fire, and Harris had planned for that activity as well. Among the field camp related material is a small booklet with a cardboard stock cover and bound with red cord, entitled "Fossil Fragments for Fireside Frappe-ing"[58]—the camp song book. Among the 26 songs are many old favorites known today, including, "My Old Kentucky Home", "America", "Tavern in Our Town", and "Mandalay." Others included are not so well known today, such as, "Soldier's Farewell", "Who Did?". "The Mountains", and "Romeo and Juliet." Campus loyalty was expected, so several campus songs of Cornell were included, "Cornell", "Cornell Rowing Song", and the Alma Mater. As the camp was open to other universities, Harris also included "Fair Harvard", and "The Orange and the Black" (Princeton). Also among the songs was not one, but TWO verses of "The Star Spangled Banner." If you listen closely on a quiet summer night in upstate New York, it is easy to imagine the lively voices raised in song still echoing off the Helderberg hills, ". . . led by the Professor's ringing tenor" (Herrick *et al.*, 1953, p. 14A).

FIELD CAMP ACTIVITIES

In 1899, the year after he became Geologist in Charge of the Geological Survey of Louisiana, Harris conducted a modest field excursion with only five students: T. A. Caine (Nunda, NY), W. M. Chapman (Elmira, NY), H. F. Cleland (geology graduate student '01, New Haven, CT), W. E. Thro (Elmira, NY), and J. Pacheco (A.B. '04, Saõ Paulo, SP, Brazil) (Anonymous, N.D.). Cleland and Pacheco attended several field camps and probably functioned as field assistants for Harris. Another member of the 1900 camp was A. C. Veatch, mentioned above.

Because of its proximity to many fossil-rich beds and other interesting geology, Trenton Falls proved a good choice for the camp headquarters in 1899 and a more permanent camp was created there for the 1900 field camp (Anonymous, N.D.). From the camp headquarters they took excursions by boat to Lake Champlain and through the Mohawk River valley via the Erie Canal. Then for the next few years, certainly for 1901 and 1902, Harris moved the headquarters of the field camp to the Helderberg Mountains in the Country Man Hill section:

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[57] *Annual Report to the President of Cornell University of the Department of Paleontology and Stratigraphic Geology*, by Gilbert D. Harris; May 15, 1901. HA-PRI, Ithaca, NY.

[58] Private collection, WRB; now at HA-PRI, Ithaca, NY.

> "The Helderbergs have been chosen for our camp or *rendezvous* this summer in place of Trenton Falls for various reasons: 1st, they show in one section ten geological formations; 2nd, they are more central, excursions can radiate out down the Hudson, up Lake Champlain, and west on the Erie canal." [59]

This camp was to cost about $65.00 for the six weeks (Anonymous, N.D.; Smith, 1902). Students could reach the camp location from Voorheesville, ". . . by special conveyance at a moderate price for person and baggage."; special conveyance was a horse and wagon. The nearest large city was Albany, ". . . being about 15 miles a little north of east from the camp." (Anonymous, N.D., p. 4). Three side trips were undertaken in 1901 using the boats, (1) to Lake Champlain as far as Plattsburg, (2) down the Hudson River to Rondout, and (3) along the Erie Canal back to Ithaca at the end of the session. The group was to spend two weeks at Valcour Island in Lake Champlain completing a survey started in 1900. In addition to the boat trips, students could take a train to visit AuSable Chasm and as far north as Georgia, Vermont.

During the first six week of the 1902 field camp, Charles E. Smith (A.B. '02) and others spent time working on the stratigraphic section at Indian Ladder. This is a famous area of Devonian rocks exposed near Albany that have been visited and studied by many famous geologists including Amos Eaton, James Hall, and Charles Lyell. During the last three weeks of the camp, the group worked at Oriskany Falls, including a trip on foot from New Salem to Oriskany Falls. At this time, topographic surveys for that part of the state were not well advanced or totally accurate, but it was important to have accurate elevations for the measured sections. To get these elevations, it was necessary to start at a point of known elevation, a bench mark, and survey elevations from the bench mark to the work site. To accomplish this during the 1902 session, Harris and the students ran spirit level lines from a new U.S.G.S. bench mark at East Berne around to all the sections being measured and over to a New York State Survey triangulation station on Countryman Hill, a distance of about 12 miles (almost 20 km). Each line was run in duplicate to ensure accuracy. This procedure allowed the measured sections to use sea level as a vertical reference point.

THE LAST DAYS OF THE CAMP

Although various field camps continued for another seven years after 1902, no detailed record of those activities has survived. In the introduction to a groundwater report, Harris states that he was doing field work in Louisiana from ". . . June 20, 1903 to July 20, 1903 . . ." (Harris *et al.*, 1905, p.1), so if he held a field camp, it could not have been during those four weeks. Hewett (1905) states:

> "Since 1899 Professor Harris has been state geologist for Louisiana, spending the time between Christmas and Easter in that state, and, *with the exception of the year 1903*, conducting a regular summer session of ten weeks in field geology and paleontology in the Helderberg Mountains and on Lake Champlain." [Emphasis added.] (Hewett, 1905. Vol. II, pp. 236–237).

Based upon the information above, it appears there was no field camp in 1903. The surviving letters from that year give no hint as to reason, but Harris was very active with his geological work in Louisiana that year.

Based on a diary entry by Henry Shaler Williams for May 30, 1904, Harris was in the field for summer, 1904: ". . . [Harris] into field—Cent. [*sic*] NY & Helderbergs from June 15–July 15 . . ."[60] Also, John Rich, in his letter to Axel Olsson mentions the 1904 camp, but, as indicated in the previous quotation from that letter, by 1904 the time spent in the field had been reduced to about two weeks.[61] Palmer (1953c) stated that all the field camps from 1898 through 1909 were held in the Helderbergs, but according to Olsson (1954), after 1902, only the 1904 camp went back to the Helderberg area. During the 1904 season Rich, Francis. L. Whitney (A.B. '06), Leopold Reinecke (M.A. '09, from South Africa), and Joviano Pacheco (São Paulo, Brazil) helped Harris trace the contact between the Devonian and Silurian rocks from Cayuga Lake to the Helderbergs. This work was published by Harris (1904, 1905a) and provided, perhaps, another valuable lesson for the students. Nowhere in the 1904 publication does Harris indicate that he had any assistance with the work; there is not even an acknowledgement section listing the students from several different field camps who worked on the various stratigraphic sections he described. In the small pamphlet on the geology of Union Springs published by Harris in 1905, however, he did acknowledge the work of Pacheco, Rich, and Whitney, and another student, C. A. Tracy, who apparently originally started the project.

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[59] *Annual Report to the President of Cornell University of the Department of Paleontology and Stratigraphic Geology*, by Gilbert D. Harris; May 15, 1901; pp. 5–6. HA-PRI, Ithaca, NY.

[60] Diary of Henry Shaler Williams, p. 128, file 3-9, Box 3, H. Ries Papers, #14/15/691, RMC-KL-Cornell.

[61] John L. Rich to Axel A. Olsson, February 21, 1953. HA-PRI, Ithaca, NY.

In any event, 1909 was the last summer Harris held the "Helderberg School of Field Geology."[62] This was also the same year he ceased being the Geologist in Charge for Louisiana, apparently because funding for the Survey was not continued by the state legislature (Pope, 1988), the same difficulty Harris had faced in Texas earlier. The conjunction of the two events, the demise of the Louisiana Survey and his last Helderberg field camp, may be just coincidence. A series of letters and notes which passed among Ries, Harris, and Acting Cornell President Thomas F. Crane in December of 1912 tends to suggest that the two had no direct connection, but this is open to interpretation; especially considering what Harris said in a letter written the following year:

> "... I shall be occupied most busily all summer in oil investigation ..."[63]

Among the Ries papers is a note, probably written by Ries in December 1912, which stated the following:

> "For several years, Professor Harris has been granted leave of absence from approximately the middle of December to the beginning of the second term, for the purpose of going to Louisiana where I understand he is interested in some private work. In return for this privilege he offered to conduct, and has conducted a geologic field excursion in summer lasting from five to six weeks."

In the Ries file, the above note is attached to a letter from Harris to Crane, December 10, 1912, in which he requested a shift of six weeks after the Christmas Holiday recess until the end of the first term for the six weeks in the summer. He said that he wanted to, "... enter the field of commercial geography during the winter six weeks ..." Harris went on to state more of his reasons for the request:

> "My reason for discontinuing [the summer field course] was that the $1500 salary I was receiving was not ample for additional equipment and by taking undergraduates or students of that rank they could not be properly cared for. Now I have several times that income and shall limit my [summer] class strictly to those who are going to devote their lives to geology."[64]

Harris, next, gave examples of former students who had become successful geologists after studying with him at Cornell. One was A. C. Veatch, mentioned earlier, who had been working as a geologist for Barber Asphalt Company in Venezuela with a salary of $10,000 per year. A few days later Harris received permission to take a leave from Christmas to the beginning of the second term.

In 1913, apparently Harris was forced to examine his situation. The arrangement of trading time in the summer for part of the regular academic year at Cornell that Harris, the "Geologist in Charge", needed to perform his duties for the State of Louisiana, now Harris, "The Consultant", found advantageous as well. He wrote to the Cornell President:

> "As to the general plan for the future, I see two roads open before me : [*sic*] (1st) To largely withdraw from elementary teaching, and devote myself to the materials which I have been collecting these 15 years past, aiding and encouraging only such students in like work as chance to come my way and seem particularly fitted for museum work and research in general—trusting that the beginnings of geology, by whomsoever given will be impartial and will naturally tend to bring a few students each year my way. (2nd) To organize a beginning course in Geology for Arts [*sic*] students, with the intention of making several such students research workers in Paleontology and Stratigraphic Geology. This course has already been suggested to me by [former] President Schurman and the present Dean. But, I have concluded, insomuch as it has been directly expressed to me that the Executive department of this University prefers me to confine my efforts to special and perhaps graduate work, and insomuch as there is now no museum help at all with thousands, yes, tens of thousands of specimens needing attention, I shall prefer for the coming year to not announce any elementary new work.
>
> "Had I not felt the need of work being done immediately and in goodly quantities in the museum, I certainly would have asked for a sabbatical leave of one-half year to attend to an offer from the University of California[65]. It would have been a great thing for me personally in several ways. . . .
>
> "Allow me to thank you for the arrangement by which I give my students, in the summer, field work in the North; in the winter field work in the South."[66]

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[62] Printed letterhead used before the 1901 field camp. HA-PRI, Ithaca, NY.

[63] Unsigned carbon copy, Gilbert D. Harris to Charles Schulz, May 19, 1913. HA-PRI, Ithaca, NY.

[64] Gilbert D. Harris to Acting President Crane, December 10, 1912. The undated memorandum by Ries is attached to the Harris letter. Heinrich Ries Papers, 14/15/691, Box 1, File 1-22. RMC-KL, Cornell.

[65] No record of such an offer exists among the Harris papers. HA-PRI, Ithaca, NY.

[66] Unsigned carbon copy, Gilbert D. Harris to "President Crane" [Thomas F. Crane], April 28, 1913. HA-PRI, Ithaca, NY.

Although earlier Harris had indicated to Crane his desire to do more commercial work, nowhere in this letter does Harris mention the fact that now he was involved with these commercial ventures and that the field work the students were doing in the south was related to this activity. Also, it would appear that perhaps some of the museum's pressing needs could have been addressed by Harris staying at Cornell for the entire year, but to do that he would have had to forego the consulting work.

So in 1913, Harris continued an informal summer field program when he and small group of students worked in southwestern New York and northwestern Pennsylvania (Olsson, 1954) for about a month:

> "I shall not be here [at Cornell University] from the 5th of June to the 5th of July, but shall be here several weeks during the Summer Session, [I will be] leaving here shortly after the 20th of July for the south; . . ."[67]
>
> "We are going for a few weeks [to a] geological summer camp in the vicinity of Warren Pa., . . ."[68]

The material collected in Pennsylvania eventually found its way into the hands of Kenneth Caster, a student of Harris, who described the fossils and acknowledged the:

> ". . . students at the Cornell Summer School of Geology at Stoneham, Pa., . . ." (Caster, 1930, p. 146).

Based upon the surviving correspondence, Harris spent several months in the south in 1913, for he received mail in Louisiana in September,[69] and his typed letters, with a secretary's initials on them, do not resume until September 29. Also, Harris wrote to Dall in October, 1913:

> "I am back safe from a hard summer's work in the south and feel unusually well and ready for work, . . ."[70]

Thus, he would not have had much time for conducting a geological field camp during the summer of 1913.

The same leave request was made the following year, and in 1914 Crane simply gave him an indefinite extension of the substitution privileges. Harris was again in the south during the summer of 1914:

> "I am planning to be away on my boat trip from June 10th until the latter part of July and from then on the remainder of the summer I shall probably be in Louisiana, . . ."[71]

So Harris continued the non-university winter activity, mostly in Louisiana, after ending the field camps, but now he was involved in commercial ventures. For a few more years he used the summer for field activities but with fewer students. Very soon, however, he had a new boat built for that purpose, *Ecphora*.

For the students, the Helderberg field camp was an experience that literally lasted a lifetime. This is illustrated by the following quotation taken from a Christmas card sent to Harris in 1938 by Miss Emma C. Robinson, a member of the Helderberg Camp in 1900. In the age of satellite images and computer mapping, it is difficult to understand what geology and geology teaching were like when what might be called the "fast lane" was a boat that sped along at five or six miles per hour. I wonder if the present day students will develop and sustain the feelings and memories such as those expressed by Miss Robinson almost 40 years after attending the Helderberg camp:

> "Dear Professor Harris and Rebecca [Harris' daughter]:
>
> "Christmas greetings from one of the old camp fire group. The pattern of my life has changed greatly since those days but through it all runs the thread of joy and gratitude that I could share those days with the Harris family.
>
> Yours Sincerely,
> Emma C. Robinson"[72]

This was certainly a view shared by Harris, for of his time with the Helderberg field camps, Herrick *et al.* (1953, p. 15A) said:

> ". . . he held those days to be the happiest of his life."

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[67] Unsigned carbon copy, Gilbert D. Harris to F. L. Whitney, May 26, 1913. HA-PRI, Ithaca, NY.

[68] Unsigned carbon copy, Gilbert D. Harris to George H. Girty, June 4, 1913. HA-PRI, Ithaca, NY.

[69] Post Card from Floy Harris to Gilbert D. Harris postmarked September 1, 1913 and addressed to Alexandria, Louisiana. HA-PRI, Ithaca, NY.

[70] Unsigned carbon copy, Gilbert D. Harris to W. H. Dall, October 4, 1913. HA-PRI, Ithaca, NY.

[71] Unsigned carbon copy, Gilbert D. Harris to F; L. Whitney, May 11, 1914. HA-PRI, Ithaca, NY.

[72] Emma C. Robinson to G. D. Harris, Postmarked Black Mountain, NC, December 16, 1938. HA-PRI, Ithaca, NY.

CHAPTER 4. *ECPHORA*

The closing of his Helderberg field camp did not stop Harris from working with students in the field, but thereafter the trips were not associated with formal class situations. The loss of his boats in the fire around 1905 did stop some of his water trips because *Orthoceras II* was not large enough for more than a few people at a time, and she certainly had limited sleeping accommodations. So the few trips were taken by the newest mode of transportation, the automobile. But his heart remained with the idea of using a boat, and he soon had another one. As two of his students wrote after the 1915 trip:

> "Not many mountains or other geological formations can be persuaded to leave their native resting place to come to college, and this is perhaps why the ancient saying about Mohammed and the mountain finds a parallel in geological instruction at Cornell University. For many years it has been the custom of Professor G. D. Harris, of that institution, to organize a summer course in field geology, that his students may see for themselves formations and places they would otherwise know only from books, and that they may collect with their own hands the fossils they study during the winter." (Schmidt and Olsson, 1916, p. 15).

In 1914[1] Harris launched his fourth and largest boat. *Ecphora*, designed by M. M. Whitaker (Nyack-on-Hudson, NY) and constructed by the Champaign Brothers Boat Works on the Inlet in Ithaca at a cost of $1,000 (Plate 5). She was thirty feet long, almost nine feet at the beam with a draft of three feet, and she carried two 40 gallon gasoline tanks. There were sleeping accommodations for six people; two bunks, two canvas beds suspended in the cabin, and two canvas stretcher beds in the cockpit. The galley consisted of a two-burner kerosene stove with compressed air in the aft section of the cockpit (Schmidt and Olsson, 1916).

Harris must have rebuilt his boat house after the fire that destroyed *Ianthina* and *Orthoceras I*, but it was not adequate for *Ecphora*. Thus, he attempted to purchase some land from Roger B. Williams, son of H. S. Williams, along the Ithaca Inlet:

> "In endeavoring to put into practice a scheme I have been teaching geology at first hand in the field I desire to construct a fairly good sized boat wherein I may accommodate comfortably such students as would profit by exceptional advantages in geologic work.
>
> "Over and above the expense of all this comes the question of the housing of such a craft. Now I have a boat house already for my own use, but this [new] boat I would have to house somewhere else. Knowing that the Williams estate owns some property on the west bank of the Inlet, I believe just north of the Intercollegiate Crew House, I am writing this to see if you cannot help me in this work to the extent of selling me say 15 or 16 feet front on the Inlet running back to the street to the west, I believe something like 60 feet, and if so kindly advise me at what rate per foot you would be willing to sell it."[2]

The correspondence does not indicate whether he was successful or not, but *Ecphora* was kept in a boat house on the Inlet.

As with previous boats, Harris turned to a mollusk for the name; *Ecphora* is a Miocene gastropod guide fossil, and later he was to use it as the symbol for the Paleontological Research Institution. In a letter to his former student, A. C. Veatch, just after Veatch made a $1,000 contribution to Cornell for Harris to use, he indicated what he hoped to accomplish with the launch and he described the new boat and his ambitious plans:

> "*Ecphora*, 8 1/2 × 30' with 30 hp. 4 cyl. 4 cyc engine. My plan is simply this: to have students go and get their own data from mother earth; to have enormous collections of good material accumulate here; to exchange and sell enough to largely meet actual expenses in the field; to use the same funds therefore over and over again; to have each student feel under obligation to return value received by way of materials, getting his pay in training and general experience; to have such collections as go out, labeled in the most accurate manner possible and mounted in the most approved permanent, and artistic manner; . . ."[3]

Ecphora was barely wet when, just four days after launching, on June 19, 1914, Harris and six students began a three-month voyage that covered some three thousand miles. Only a few weeks before Harris was trying to raise money for the fuel through the University and explaining how valuable the resulting collections would be:

> "I have to report that I have practically completed my personal cruising outfit and have selected seven first class men to help do collecting down the Atlantic coast, in the Tertiary formations during a period of 6 weeks, and I am now asking you if the sum of not to exceed $100 for fuel I mentioned formerly will be available by a week from today [*sic*]. You remember that I have stated that the col-

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[1] The craft was constructed in the early part of 1914, ". . . I am building a large boat . . ." Unsigned carbon copy, Gilbert D. Harris to I. Perrine, March 23, 1914. HA-PRI, Ithaca, NY.

[2] Unsigned carbon copy, Gilbert D. Harris to Roger B. Williams, March 16, 1914. HA-PRI, Ithaca, NY.

[3] Letter from Gilbert D. Harris to A. C. Veatch, no date, but written in response to Veatch's donation made October 25, 1915. Copy at HA-PRI, Ithaca, NY.

> lections will be worth several hundred dollars perhaps $1000 and that you were kind enough to say that there should be no trouble in raising the $100 under such conditions."[4]

But Harris was having some difficulty with the new "channels" that had been created recently with the appointment of Heinrich Ries as Department Head. President Schurman responded to Harris' request with these words:

> "I have just received your communication of June 2nd (which by error is dated May 2nd) asking for an appropriation of $100 for fuel for your trip to collect material down the Atlantic Coast.
>
> "Please talk this matter over with the Head of the Department of Geology and have him in the usual way forward your communication with his endorsement thereupon."[5]

He must have received the fuel money, for the group went as far south as New Bern, North Carolina before turning *Ecphora's* bow northward; a three-month journey of over three thousand miles. The students were Victor Elvert "Monty" Monnett (Ph.D. '22), Parkin "Park" Wong (M.A. '14), Oliver N. "Ollie" Olson ('20) (not to be confused with Axel A. Olsson, who was on the trip the following year)[6], Karl P. "Hans" Schmidt (A.B.'16)[7], Henry R. "Sunny" Sunball ('16), and Lloyd G. "Nellie" Grinnell ('16). (Olson, Sunball, and Grinnell did not major in geology, although they studied with Harris.)

"Nellie" Grinnell kept a very lively and descriptive diary of their adventures on this trip. This journal and accompanying photographs (e.g., Plate 6) were presented to Harris on October 2, 1944, his eightieth birthday[8]. The diary forms the basis of the following account which gives the general flavor of the trip. Not only does Grinnell's diary describe the important paleontological collecting they were able to do, which included several new species, but it also illustrates the closeness and camaraderie that developed among the group, and especially between Harris and his students.

The voyage had an ominous beginning. That first day engine trouble and very stormy weather kept the party from getting out of Harris's boat house on Cascadilla Creek near Steamboat Landing where they all spent their first night—Harris sleeping on the floor of the boat house and the boys sleeping either on *Ecphora* or *Orthoceras II*. The following morning they made another attempt to leave Ithaca, but first they had to dredge up the starboard light, which had fallen overboard during the night. The engine problems also had not been totally solved and required further diagnosis and cure. Then the group was delayed (for some unknown reason) by the "R. H. McGreeny Funeral." But, finally, at about 1:00 P.M., they cleared the Inlet lighthouse, "thumbing our noses at it as we sped by." They were making about "six miles per hour, or knots or crinoids or something," and had the Cornell pennant flying from the masthead[9]. After about seven hours the group reached the Montezuma Lock at the north end of Cayuga Lake. Here disaster almost overtook the party, again:

> "We were raised up in a lock and were ready to start on. Our engineers, Prof. Harris and Hans, started the engine backwards and the boat was plowing backwards, nearly slamming the back deck into a bridge, but just in time Sunny used his head, reversed the propeller and we went ahead." (June 20, 1914)[10]

With the engine restarted in the proper direction, they continued along the Erie Canal for two days to Pattersonville, New York where they were joined on June 23 by Ernest Rice "Sister"[11] Smith (a geology graduate student '13–'19). Pearl Sheldon (A.B.'08, M.A.'09, Ph.D. '11) and Eleanor Long (A.B.'15), also from the Cornell geology department, met the group there, and spent the day with them collecting fossils. Long stayed on board as far as Albany. Later, in the Washington, D.C. area, they were joined by Harris's brother, Rollin, who stayed with the party for part of the day on July 19.

As they reached each suitable collecting area, *Ecphora* would be tied up to a jetty or anchored and the crew would visit outcrops and quarries to study the exposed geology and make collections. On Chesapeake Bay near Herring Bay, according to Grinnell, they spent more time collecting berries than fossils. A similarity between many present-day geologists and these 1914 adventurers appears in the diary entry for July 1, when they were at Chesapeake Beach: "In the evening we went ashore and bought can openers and some Schlitz beer, the first we had since Hudson, N.Y. on June 25th."

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[4] G. D. Harris to Jacob G. Schurman, May 2, 1914 [with June inserted above May]. Schurman Papers, v. 34, Pg 256. RMC-KL, Cornell.

[5] Jacob Gould Schurman to G. D. Harris, June 2, 1914. Schurman Papers, 3/4/6, v. 34, Pg. 256. RMC-KL, Cornell.

[6] An article about the trip in *The Ithaca Journal*, June 6, 1914, lists A. A. Olson as a member of the party, but L. G. Grinnell's diary has the names as they are listed here. Also, A. A. Olsson's name is spelled differently and he did not use the nick-name of "Ollie." The newspaper article is incorrect.

[7] The nick-name "Hans" came from the name of a famous murderer of that era, Hans Schmidt of New York City (Schmidt and Olsson, 1916). Karl Schmidt later worked with the American Museum of Natural History and became a well known herpetologist.

[8] Both reside now in the library of PRI. HA-PRI, Ithaca, NY.

[9] This Cornell pennant survived the trip and now hangs at PRI.

[10] The dates refer to Grinnell's diary entries.

[11] The nick-name, Sister, was given to Smith because he came to Cornell from "religious Oberlin." (Schmidt and Olsson, 1916)

Their engine troubles were not over and it proved to be a constant source of irritation for them. Harris, however, was "not only a great geologist but a master mechanic as well," according to an entry in Grinnell's diary. As they were often moving in uncharted waters, running aground was another constant threat. One such occurrence was at Jones Wharf on the Patuxent River in Maryland:

> "As we landed, we hit a reef and you should have seen us pile off the boat. . . . We all pushed the boat with Prof. Harris at the bow and others astern. The boat finally started with a lunge as a wave helped raise the boat and our pushing almost ran the Prof. down; at least knocked him over and how we laughed and roared as he came up out of the water with his clothes on, his glasses wet and he sputtering and spitting out the salt water he had gargled. What a picture!" (July 3, 1914)

Rough seas, also, were not unknown on this voyage. A storm on July 4 continued with high waves the following day, and "Monty got so sick he felt sorry for the fish and fed them plentifully. We all played cards." Monty left the group on the evening of the 5th to go to Baltimore, while the voyage continued down the Bay toward Virginia. Here in the swamps of Tidewater, mosquitoes and other bugs became a real problem:

> "We anchored [up the Pamunkey River] alongside a huge marsh, with water moccasins, crawling with huge snapping turtles and swarming with mosquitoes as big as bats. Awful mosquitoes! We tried camphor-ice, Nyals, Skeeter-shoot and mosquito netting. They seemed to think we were throwing a party for them and everything we used was dessert and we were the main course. We were being eaten alive, but their buzzing in swarms sounded like bees swarming and drove us nutty. We couldn't sleep." (July 9, 1914)

At Petersburg, Virginia, this group of Northeasterners were told an unfamiliar version of a battle in the War between the States. An old Confederate veteran told them about how a Confederate lieutenant and eight hundred men drove Grant and fifteen thousand "Yank Rebels" as he called them, out of a fort that was known as "the Crater" after the Yankees mined it. "We were appreciative listeners," Grinnell commented. The story of the "Crater" was part of the Battle of Petersburg which resulted in a large loss of life, especially among black soldiers of the Union Army, and Harris' students heard about it from one who was there. Although history shows that Grant had very little to do with this battle, that probably made for a better story to tell those "yankee students."

Health and safety were constant concerns for the group, and although they took proper precautions, sometimes there were accidents. For example, on July 12, near Williamsburg, Virginia, Sunny was attempting to learn to swim while the others were collecting fossils along the beach, when Harris stepped on a serrated fish bone that went almost through his foot. Apparently they had a tough time pulling it out; Grinnell wrote in his diary, "It was a very painful ordeal and is very sore" (July 12, 1914). The "operation" must have been successful, for Grinnell made no further mention of the incident or of any complications as a result of them pulling out the bone.

On July 16, near City Point on the Appomatox River, the group met its first real danger. In threatening weather and an outgoing tide, they tried to take a shortcut across Tar Bay and became stuck in the mud:

> "We all tried to push, we sank into the soft mud, and the boat barely wiggled. We were frantic. Something had to be done quickly or the tide would leave us high and dry in the mud. We struggled back into the channel. No other boat would dare come into [sic] pull us out, and no sign of civilization anywhere. Then the lightning flashed and thunder rolled.
>
> "Hans and Park went out in *Pecky* [*Pecten*, the dinghy] to sound for deeper water. It was several hundred feet to our left. But how could we get there in that soft, footless mud? The harder we pushed on the boat, the further we sank into the mud. We were desperate! The Prof. came to the rescue as usual. He directed us to take the 80 lb. anchor with its long heavy flukes out to the end of our 100 ft. of rope. We rowed it out and two fellows, Hans and Ollie, stood on it in the mud while the rest of us on the boat heaved on the rope. . ..[T]hen by moving the anchor out three times more and pulling up to it three times, we finally got into deeper water and the boat floated." (July 16, 1914)

As soon as the boat was in a safe mooring near Coggin Point, the storm abated, the sun came out, and they continued their trip to the end of Tar Bay to check on a location of Miocene sediments:

> "This must have been a Miocene burial ground, for fossils were thick as gravel stones in a gravel pit. We had collected but a few minutes when Ollie found a new species of cardia [sic]. Soon we found two new pectens that we had not found before. One of these, too, was a new species that had never been named. I found what I prized highly. It was the largest Ecphora of this or any other trip. Prof. Harris found a large one many years ago, and it is now in the Smithsonian Institution, as the largest one known. But this beat that one. It is a whopper nearly as big around as my head. The Prof. says the one he found is the size of a big fist. This one is four times as big." (July 16, 1914).

Eventually they had to begin to retrace their path back toward Ithaca, and the diarist experienced his first and only bout of seasickness. His remedy will probably never replace dramamine. It was Grinnell's time to prepare breakfast:

> "There was a heavy sea running. The wind was strong, and the tide was going out. The boat tugged at the anchor rope and the cross wind chopped the Ecphora up and down in a rotary motion. Either that motion or the fumes of the kerosene stove on which I was cooking breakfast gave me a funny feeling in my stomach, and I felt I must be getting seasick, although I had never been before. . . . I had on only sailor pants, so I dropped them off, and rushed up on deck and dove off the top of the boat on the leeward side. A solid mass of slimy, stinging jelly fish or portuguese [sic] men-of-war had collected there in the protection of the boat away from the wind. I smashed right into them. They were all over my naked body and in my hair. I dove down through them, but then dared not come up, so swam around and under the front of the boat, and came up on the windy side. When I had clambered aboard, I was no longer threatened with seasickness. But I was almost stung to death by the jelly fishes, or more properly stung to life, for they certainly revived me. After finishing the preparation of breakfast, I turned off the kerosene and swam ashore." (July 22, 1914).

As they were going north through the Delaware-Chesapeake Canal, Hans invented a new sport: he would dive off *Ecphora* and catch the trailing *Pecky* as it came by. But if he missed the dinghy, he had to swim to shore, run along the towpath, then dive in ahead of the boat and swim out to catch it. Before long others were trying this, and on one such venture, Sister, who only a week or so before was trying to learn to swim, Hans, and Nellie all missed *Pecky* and had to run about one hundred fifty yards to catch *Ecphora*. They all dove into the canal to swim to the boat and Hans and Nellie were hauled on board, but Sister, who was very much out of breath from running, missed the pickup and sank:

> "So we passed him by and he went down to the bottom of the canal, probably about ten feet deep. Hans quickly dove overboard and I threw a life preserver about where he would come up. Before Hans got to him he came up and sank a second time, but he did not see the life preserver. Sunny turned the boat around, and I dove in to help find Sister. When he [Sister] went down the second time, his feet hit bottom and he kicked so hard that he came up quickly and Hans grabbed hold of him. About that time I got in the way of the boat and almost got run over as I scraped alongside and just missed the propeller as it went by, then *Pecky* bumped into me and I held on to her and helped Hans tow an exhausted "Sister" Smith to *Pecky* and then to the *Ecphora*. But he was all right as soon as he got his wind." (July 22, 1914).

The following day they saw the body of a young boy, who had not been as lucky as Sister, being pulled from the canal.

Although their primary interests were paleontology and stratigraphy, the return trip beneath the Palisades along the Hudson River brought out the poet in Grinnell:

> "This was really the most beautiful scenery we had yet seen. The Palisades are beautiful colums [sic] and towering cliffs with deeply carved towers, all dotted with green shrubbery, and all high above the majestic Hudson. The intrusive columns of the Palisades make a rare picture. The highlands, too, with their rounded domes of Archaean rock and huge whale backs, bumped up here and humped up there with a beautiful valley of green forest in between. There were many huge castle-like homes perched up on the heights overlooking the river, and as we looked up at them they were seemingly hanging from the sky, while others were clinging, perched precariously on the edge of a cliff or a steep hillside. It all made an enchanting picture." (July 24, 1914).

It was one in the morning on July 27th when they reached the lock into Cayuga Lake, and the lock-tender had gone to bed. But by this time they were all experienced "lock-tenders", and they simply let themselves through. They had to awaken the operator of the last railroad bridge to let them pass, however, paying him ten cents for his trouble. At last, they were on "the broad bosom of Cayuga Lake" by 1:20 A.M. After an all-night run down the lake, Hans dove over the side for a morning swim and nearly froze. Cayuga Lake was much colder than the Chesapeake.

Grinnell summed up the voyage:

> "Thus ended the epic trip of the great little ship, the *Ecphora*, and her baby the *Pecten*, which had bobbed along behind us for many a league of knots. This had been a great experience for all of us, and a grand cruise in more ways than one. We all felt it had been eminently successful, as we had found many wonderful specimens and discovered several new species for Professor Harris and his department to classify and name. We had had a lot of fun and we all loved and respected one another. It was a grand bunch of fellows, but more than that for dear Professor Harris: we all felt that he was super, and the finest and grandest man it had ever been our privilege to be associated with. May he live long and ever happily in order that he may fulfill a great contribution to Geology and particularly to Paleontology. His name and his fame will echo down through to ages, long after the rest of this motley crew are forgotten." (July 28, 1914).

This journey, like all the others, was more than just swimming in the canals and fighting off jelly fish; there was a serious side as well. The people who accompanied Harris on these boat trips were privileged to see a master paleontologist do field work and thereby learn their craft, and these extended trips built a bond between student and teacher that literally lasted a lifetime. And, of course, there was the resulting science, *i.e.*, the descriptions by Olsson (1914) of some of the material the group collected on this journey to the Coastal Plain.

In reading Grinnell's description of the trip, one is led to wonder whether today's students are missing something when in less time than it took them to reach the end of Cayuga Lake we can cross a continent. How much more detail can be seen in the Palisades from a boat drifting by them at six miles per hour than from a car driving across the top at sixty miles per hour, or a plane flying over them at six hundred miles per hour!

The following year, 1915, there were some questions from the University administration to Ries concerning Harris' summer activities. President Schurman wrote:

> "As you [Ries] are perhaps aware, Professor Harris, up to 1912, was professor on half time at a salary of $1500. In 1912, after Professor Tarr's death, he was asked to give full time for the year 1912–13 at a salary of $3000 for the year. At the expiration of that year, he was re-appointed professor for one year for $3000, and in the following year (May 11, 1914), he was again appointed professor for one year at $3000.
>
> "I should like to know now whether the University needs the full time of Professor Harris, or whether the University could revert to the arrangement, which was in existence for many years, under which he gave the University half his time. . . .
>
> "If Professor Harris is not to be absent from the University half of his time, does he desire to be absent for a portion of his time?. . . . I should think it advisable if this arrangement is to be continued, that a resolution should be adopted by the Trustees authorizing it generally and making a fair adjustment of the salary.
>
> "Professor Harris has I know been very much interested in summer work in paleontology. . . . If, however, students are taken away in the summer and given credit for their work, would it not be fair that they should pay a fee? And if Professor Harris himself gives time in the summer to the instruction of students, it would seem fair that he also should receive some compensation. I hasten to add that it may be impossible to authorize the summer course in paleontology, if the receipts therefrom are insufficient to cover all the expenses incurred in connection with it.
>
> "I must add for your information that I am not at all certain that the Trustees would or could grant professors in the University leave of absence for six weeks or so during the regular academic year on condition that they give a corresponding period of time to summer instruction. That, however, is a question which must be settled by the Trustees. I only note it here in order that you [Ries] may not take any solution for granted."[12]

After some discussion with Ries, Harris replied:

> "Upon due reflection re matter discussed yesterday I believe the interests of all concerned demand that what work over and above the regular university year is undertaken by members of this branch of the department be limited entirely to private enterprise, thus eliminating all misunderstandings as to expense, tuition, credit, and serious obligations that may at some time be almost impossible to fill. It costs time, money for fuel, repairs, upkeep, interest on investments, insurance, to say nothing of worry and risks at least $1000 to carry out a successful cruiser expedition along the East Coastal regions, and what little would be returned by tuition at $30 apiece [*sic*] would amount to very little towards the whole. Of course it would be a little but would weigh nothing in assuming such responsibilities to be carried out every year without fail. Personally I hope to be able to carry out this work as planned for at least 10 years. But the expenses are too great for me to promise certain extensive programs definitely every year."[13]

Regardless of the cost, however, Harris took some students on *Ecphora* down to the coast again, going through Dismal Swamp Canal to Albemarle Sound, North Carolina and the Neuse River; eventually covering over 3000 miles between June 7 and August 11, 1915. But before embarking on the second major voyage with *Ecphora*, Harris had to do some modifications:

> "Ax [Axel Olsson] tells me you have bought the Ecphora an engine and a good one, which is certainly good news . . ."[14]

The four cylinder, 30 horsepower Loew Victor engine, built in Chicago[15], was purchased from Bruns, Kimball & Company, of New York City.[16]

The students on this trip included E. R.(Sister) Smith and Karl P. (Hans) Schmidt (both back for a second summer); Charles. P. (Chuck) Alexander, the entomologist; Bayard Taylor; James D. (Tommy) Thompson, Jr. (graduate student '14–'16), who was the "chef as distinguished from cook."; and Axel A. Olsson (A.B.'13)[17]. Taylor did not graduate from the Geology Department. Schmidt was considered the engineer and vertebrate zoologist; Smith was "commissioner of business affairs"; and Olsson was the chief cook, electrician and paleontologist (Schmidt and Olsson, 1916). This voyage resulted in the collection of more than sixty boxes and barrels of Miocene fossils and rock samples.

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[12] Jacob Schurman to Heinrich Ries, May 28, 1915. Heinrich Ries Papers, 14/15/691, Box 1, File 1-22. RMC-KL, Cornell.

[13] Gilbert D. Harris to Heinrich Ries, June 1, 1915. Heinrich Ries Papers, 14/15/691, Box 1, File 1-22. RMC-KL, Cornell.

[14] Karl P. Schmidt to Gilbert D. Harris, March 5, 1915. HA-PRI, Ithaca, NY.

[15] Instruction booklet from Loew Victor Company. HA-PRI, Ithaca, NY.

[16] M. C. Kimball to Gilbert D. Harris, March 16, 1915. HA-PRI, Ithaca, NY.

[17] Axel A. Olsson (1889–1977), a student of Harris', worked for various oil companies, including Sinclair. He was a founding member of PRI and first President, and was present at the laying of the corner stone on June 28, 1932 at the Dearborn Place facility (Moore, D. R., 1978).

Although there is no diary record of this trip, an article by Schmidt and Olsson in *Power Boating* magazine following the journey gives a wonderful account of the trip and provides an inside look at their experiences. The following description comes from that article.

The group left Ithaca about 11 A.M. on June 7 giving the Ithaca Lighthouse the "Cornell yell", and entered the canal system five hours later. Mechanical problems were not unknown on this trip either, even before they cleared the New York canal system. Just below Little Falls the reverse gear broke off at the collar and it took four day to get it repaired. But they were in the Hudson River by June 15. They took a quick stop to inspect, and admire, the museum at Princeton University before continuing down the Delaware Canal system, and gaining a healthy respect for the New Jersey mosquitos. At least two of the *enfants*, as Alexander, Thompson, and Taylor were known by the rest of the party, discovered the joys of seasickness shortly after *Ecphora* entered Chesapeake Bay. It was in this area that the serious collecting began, although the group was also impressed with the Cretaceous fossils they saw piled along the banks of the Delaware and Chesapeake Canal:

> "Few places that we saw on our journey offered a more desirable field for study than the 13 miles of this one-hundred-year old canal, so that we envied the lock keepers their magnificent opportunity, of which they doubtless never dreamed." (Schmidt and Olsson, 1916, p. 19).

At Langley's Bluff, a small anchorage south of Cedar Point, where they took shelter from the wind and high waves, they did their first real collecting. The wind did not let up and Thompson and Alexander became so seasick that they were put ashore to walk to the next anchorage, without their shoes, of course. They took a side trip up the Potomac to Washington, D. C. where Harris had worked about 20 years earlier. It was here that the trip nearly ended in disaster. Just before taking a shore excursion, someone left the fuel tank valve open and they returned to find about 20 gallons of gasoline in the bilge. After cleaning up the spilled fuel, they proceeded back down the Potomac collecting at such famous localities as Aquia Creek, Potomac Creek, and Pope's Creek, all yielding many boxes of fossils and valuable first-hand experience for this group of young geologists.

At the mouth of the river the winds and waves were still high and they took refuge at the village of Lewisetta and explored the art of dealing with a boat stuck on a mud flat. They should have conferred with those from the 1914 trip, who had a similar experience. But each learned on their own. The procedure seemed simple enough: when the boat ran aground, or "snotting it" as they called it, all hands but the captain shed their trousers and went overboard to lighten the boat. Then she usually floated free or could be pushed back into deeper water. But when the water was filled with jelly fish whose nettle-like sting could persist for many hours, the procedure became more complicated and painful, if no less necessary.

While in the harbor at Hampton Roads, Virginia, the group saw several interned German cruisers, a grim reminder of the realities of the world in 1915. Two of the group were to come face to face with these realities a little later in the trip. They travelled near Roanoke Island, where Sir Walter Raleigh had established his ill-fated colony some 330 years earlier. Eventually on July 7, 30 days after leaving Ithaca, the hardy band of travelers had reached their destination, New Bern, North Carolina and the junction of the Neuse and Trent Rivers. Here they split into three collecting parties and each went off in search of fossils; some by rail south to Wilmington and north to the Chowan and Meherrin Rivers. On July 15, the three who remained with the boat started north and the rest joined them along the way, with some interesting tales to relate.

Although Schmidt and Olsson say little about their adventures in their article, probably because Olsson was directly involved, newspapers from Virginia and Baltimore to Ithaca carried the story. *The Ithaca Journal* of August 30, 1915 does give some indication of their activities. It seems that on one occasion, Olsson and Taylor were near Harrellsville[18], a little town in North Carolina along the Chowan River, checking stream beds, hillsides, back yards and gardens, and other out-of-the-way places, for fossils. The local inhabitants thought their behavior rather suspicious—particularly as the nation was almost at war. The sheriff, who was 15 miles away, sent word that the village doctor, storekeeper, and hotel keeper should act as a "Committee of Investigation." The two students were picked up and taken before this committee. When questioned, their claim to be just collecting rocks, brought laughter to the captors. The villagers knew these strange people must be either spies or crazy, for everyone knew the rocks in that part of the country were useless. Eventually, after producing some shipping receipts for samples they had shipped back to Cornell, the pair convinced the townspeople they were telling the truth and that they were not German spies. A very disappointed posse released their prisoners, but were happy that their city was in no danger from German submarines.

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[18] The Suffolk newspaper article named the town "Haroldsville".

A local paper in Suffolk, Virginia, got wind of the story and made much of the fact that their neighbors to the south had taken Cornell geologists for German spies. Then it made the editorial page of the *Baltimore News* which compared it to a similar incident when a local group went out to investigate the "suspicious" behavior of a Harvard geology professor out in the Bad Lands of Dakota. As the group was about to surround him, thinking they were a band of outlaws, the professor took flight and led the group on a wild, 40 mile chase through the hills before he was "captured." And now another case had occurred in "far-off but sociologically wholly different North Carolina." Putting the two incidents together, the editorial suggested it was clearly the fault of the scientists:

> "The occurrence of two such distinctly differentiated yet analogous cases acquits the Bad Lands of gross ignorance of inhospitality. It puts squarely upon the geologist the obligation to wear some mark which will distinguish him from the undesirable. Clearly the symptoms of his vocation are dangerously confusing."[19]

In another town things got more serious when a farmer fired a shotgun at Thompson. It seems that Thompson had been collecting in a nearby quarry and was walking back toward the boat with his arms full of fossils. He heard someone tell him to stop, but assumed the command was meant for someone else and seeing no reason to stop, he walked on, until the man behind the voice fired his shotgun. Apparently, someone had been stealing watermelons from a field near the quarry, and when the farmer saw Thompson with his arms full, he felt he had caught the thief.

The return journey was made over the roughest water of the entire trip and, according to Schmidt and Olsson, it included battling some of the largest mosquitoes ever seen. In 1914 the run from Newport News, Virginia to Ithaca had taken eight and a half days, but various mechanical problems did not allow them to break that record. Ominous sounds and propeller shaft vibration developed as the engine was run at slow speeds. An inspection showed no obvious problem or cause. At other times, all went well, and once they ran the engine for 22 hours straight with no difficulty. Their trip north provided some memorable times and sights:

> "What words can describe the feelings of the pilot, as he watched the slow rise of the constellations in front of him, and came to anchor safely in the Elk river, just inside of Turkey point, as the moon set blood red in the west." (Schmidt and Olsson, 1916, p. 21).

The next morning they discovered the propeller had fallen off.

They found two men with a boat who were willing to tow *Ecphora* to Havre de Grace on the Susquehanna River where they found an old foundryman who would cast them a new one. Unfortunately the blades of the only mold he had were too large, but with some grinding work, they managed to limp into Chesapeake City for a proper replacement, only to have the vibration return when they restarted the journey. This time the shaft had to be replaced, but the rudder was in the way, which would have meant digging a three foot hole in the ". . . doubtful smelling mud of the Brandywine, racing to get it done before the return of the tide, . . ." But Harris came to the rescue with a simple idea. They simply turned the rudder sideways and drilled a 1.5 inch hole in it right over the shaft and slipped in the new shaft in short order.

But they continued to have engine and other troubles all the way back to Ithaca, including stripping all the gears in the magneto, and finding a bridge down across the canal at Utica. By removing all awnings, they were able to slip under the bridge, much to the disappointment of the local crowd. They finally reached Ithaca on the afternoon of August 11 to the cheers and congratulations of friends and relations. The journey of 3000 miles had produced about 60 boxes for fossils, over 5000 pounds. Some of the fossils were described by Olsson (1916).

For the students:

> "The value of the trip to us-students of science-could scarcely be estimated. Professor Harris' attitude toward his students seems best expressed in the words of his predecessor at Cornell, Charles Frederick Hartt, in his account of the Morgan Expedition[20]: 'If to discover a new Carboniferous Fauna will repay a journey to Brazil, of how much greater importance is the discovery of a new Naturalist?'" (Schmidt and Olsson, 1916, p. 46).

As had been outlined in Schurman's letter in May, 1915, it appears Harris' summer field activity was running afoul of university bureaucracy. That autumn, Harris wrote to Ries:

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[19] "It Might Happen Anywhere" *Baltimore News*, July 25, 1915, page unknown.

[20] A Cornell expedition to Brazil funded mostly by Colonel Edwin B. Morgan of Aurora, New York in 1870. The rest of Hartt's quotation is, "Had the expedition produced no other results than to have added four new men to science, I should have considered time and money amply well spent." "The Morgan Expedition, 1870–71, *Bulletin of the Cornell University: Science*, v. i, no. 1, p. 4)

> "If another expedition to the south is altogether too expensive for my private funds, I can perhaps for one year equally well continue a little piece of delayed work in northwestern Pennsylvania that I commenced three years ago; work that would imply topographic, stratigraphic, paleontologic, and physiographic research of various degrees of advancement."[21]

Ries replied quoting from Schurman's letter from the previous spring about the Trustees probably not approving the arrangement of replacing regular academic term work with summer activities for all professors, and thereby eliminating it for the one. Ries closed with:

> "He [Schurman] believed that if a department is to run summer work, it should be treated as a separate matter, and separate compensation should be allowed for it. And if such compensation were allowed, it seemed but fair to the President that the students taking this summer work should pay a tuition fee.
>
> "As you were not willing to agree to the latter, I could not agree to ask the Trustees for an appropriation for the summer course, your final decision was to run this as a private matter."[22]

Thus the victim of the University bureaucracy and rising costs, there is no record of any further extended boat trips by Harris after 1915. He did continue using *Ecphora* for short trips on the lake, but he was already looking to the future, for in his Annual Report to Ries, head of the department, for 1919–1920, Harris said:

> "Several excursions were given on the lake by boat last fall and will be this spring [1920], but I find for small classes that a Ford is very desirable. In the University of Texas I understand a large excursion truck is owned by the department for excursion work."[23]

Ecphora continued to make various field trips until about 1920[24] (Palmer, 1953a), when Harris sold her to A. C. (Dave) Davis, a Cornell engineering professor. She must have stayed in the Ithaca area, for by 1964 *Ecphora* was owned by Peter Paul Kellogg, a Cornell ornithologist who used her for his exploration and research. When last heard of, according to Kellogg, she had been taken to Florida, but her current location or condition is unknown.[25]

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[21] G. D. Harris to Heinrich Ries, September 22, 1915. Heinrich Ries Papers, 14/15/691, Box 1, File 1-22. RMC-KL, Cornell.

[22] Heinrich Ries to G. D. Harris, September 25, 1915. Heinrich Ries Papers, 14/15/691, Box 1, File 1-22. RMC-KL, Cornell.

[23] Page 2; G. D. Harris Annual Report for 1919–1920 submitted to Heinrich Ries, April 15, 1920. Heinrich Ries Papers, 14/15/691, Box 1, File 1-85. RMC-KL, Cornell.

[24] In a personal communication July 22, 1983, Katherine Palmer indicated that 1918 was the last major *Ecphora* field trip.

[25] History of the *Ecphora* prepared by Peter Paul Kellogg, June 10, 1964. Copy in HA-PRI, Ithaca, NY.

CHAPTER 5. THE LOUISIANA SURVEY

Although it is not known exactly how or through whom Harris secured the appointment in Louisiana, there is little doubt that during his various trips to Arkansas and Texas, and with his work near the border between northern Louisiana and Arkansas while doing stratigraphic mapping for the Arkansas Geological Survey, he must have come in contact with influential people in the Louisiana government. With those connections plus his reputation as a Tertiary paleontologist, Harris was appointed "Geologist in Charge" for the Geological and Agricultural Survey of Louisiana in 1899. Pope (1988) states that he followed William W. Clendenin, who had led the survey from 1894–1897. The original state survey, the Topographical and Geological Survey of Louisiana, was organized in 1869 after the recommendation of a special committee in 1856:

> ". . . a geological and scientific survey of the State of Louisiana, is under all the circumstances, much to be desired, and that it should be judiciously, not too rapidly, prosecuted." (Riddell *et al.*, 1856, p. 6)

This original organization lasted until 1872 when funding was withdrawn.

A new Survey started again in 1891–92 as the Geological and Agricultural Survey of Louisiana under the direction of Dr. Otto Lerch who came to Louisiana from the Texas Survey. Each of these Surveys was associated with Louisiana State University and Agricultural and Mechanical College (LSU) in Baton Rouge, and Survey directors were expected to serve on the faculty of LSU as well. But funding ended again in the very year it was commissioned. In 1894, William Clendenin assumed the leadership of the Survey, lasting in this role until 1897. According to the letter of transmittal for the 1896 report, Clendenin devoted ". . . October to March . . . to LSU . . . and the rest of the time to field work of the survey." (Clendenin, 1896, p. 163). Thus, a pattern was established for the Survey director to be "part-time," which Harris continued when he spent part of his year in Louisiana and the rest at Cornell.

When Harris was appointed in late 1898, there had been no survey work for two years. At this time the geological survey activity came under the political arm of the State Experiment Stations, which had Dr. William C. Stubbs as their Director. Harris, like Lerch before him, was not on the LSU faculty. That very first year, 1899, A. C. Veatch (age 21) worked as Harris' assistant, a position he held for several years. Veatch was the first of several Cornell students, as well as some from LSU, who worked with Harris in Louisiana. In his letter of transmission to the Governor for the 1899 report, Stubbs extolled the quality of the work that team did during their first year:

> "Since our last report of the Geological and Agricultural Survey, a complete change has taken place in the personnel of the survey. Prof. W. W. Clendenin, who performed the duties of Professor of Mineralogy and Geology in the Louisiana State University and A. and M. College, and geologist for the stations, has severed his connections with both institutions by resignation, and taken charge of Blees' Military Academy, at Macon, Mo.
>
> "Upon his resignation arrangements were made with Prof. Gilbert D. Harris, Ph.B.[1], of Cornell University, who is the recognized authority of this country in Tertiary geology, by which he was to conduct the survey under our direction and publish annually a report of his work. He gives considerable time to the actual field work and writes and superintends the publication of his reports. Mr. A. C. Veatch has been selected as his assistant and gives his entire time to the field and office work of the survey. Mr. Veatch is an acknowledged authority upon Quarternary [*sic*] geology, and with his assistance we feel satisfied that the entire State, which consists almost exclusively of tertiary [*sic*] and quarternary [*sic*] formations, will be correctly and fully reported. These two gentlemen have persistently followed their work through freezes and sunshine, over intolerable roads, impelled by an enthusiasm known only to lovers of science. How well they have accomplished their work, the present volume will testify." (Harris and Veatch, 1899, p. 4)

In his own letter of transmittal to Stubbs, Harris outlined their activities and had some words of praise for Veatch:

> "Mr. A. C. Veatch acting as assistant geologist, commenced field work November 1st, 1898, and studied the distribution of the soils of Caddo and Bossier parishes until my arrival in the State, December 23rd. Thereafter we worked for the most part together in De Soto, Sabine, Natchitoches, Grant, Winn, Caldwell and Ouachita parishes.
>
> "After my departure from the State, the last of March [1899], Mr. Veatch continued work in the northern tier of parishes between Ouachita river and Red river until requested by you to visit the Five Islands and the Sulphur region of the southwestern part of the State. This done, we worked on the report herewith transmitted from midsummer to late autumn, when he again took the field and I saw to the completion of the report.
>
> "I gladly take this opportunity to inform you that Mr. Veatch has in all his connections with this survey, shown

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[1] Bachelor of Philosophy.

> himself a most capable and energetic assistant; and it is to his untiring zeal, and your [Stubbs] never failing and well directed support that such success as the survey has been able to attain is largely due.
>
> "Most respectively submitted,
> GILBERT D. HARRIS,
> Geologist-in-Charge.
> Cornell University, Ithaca, New York,
> November 25, 1899."
> (Harris and Veatch, 1899, p. 6)

Harris was always mindful of his own strengths and weaknesses with regard to geological work, and this first report of 1899 illustrates that quite well. For the necessary work that was outside his expertise, he involved other colleagues; Heinrich Ries of Cornell did the analysis of clay samples that Harris collected (Ries, 1899), and Arthur Hollick of Columbia did the fossil plant identification (Hollick, 1899). And even though the section on the Cretaceous fossils is published under his name, in the introductory remarks, Harris gave full credit for the identification of these fossils to T. W. Stanton, a former co-worker at U.S.G.S. Pope (1988, p. 188) describes the results of the 1899 activities as, "By far the most productive of the early surveys."

One very important aspect of the reports of 1899 can be found in Veatch's report on "The Five Islands" (Veatch, 1899) in which he maps and describes salt domes in the Parishes of Iberia and St. Mary. Although at this point in time, salt was the attraction, not oil, it was Veatch's careful mapping, especially of Petite Anse Island, that revealed these important structures. Veatch mentions the existence of both oil and gas associated with the salt deposits:

> "In hole number 10 [on Belle Isle] gas was struck at a depth of 120 feet in sufficient quantities to throw sand all over the derrick. It is now bubbling out the hole where it can be easily collected and ignited. A small amount of gas and oil was struck in hole number 4." (Veatch, 1899, pp. 224–225).

The cross section in figure 6 in Veatch's paper is a classic salt dome structure showing holes 4 and 10 on the flank. Further, Veatch concludes that the, ". . . dome shape is due to uplift and not erosion." (1899, p.228). He found similar structures on the other islands as well.

The work of Harris and Veatch put to rest the current popular belief in a Cretaceous "backbone" which was supposed to extend through the Five Islands area and connect with structures running up through Arkansas:

> "Our observations go to show that whatever folding and faulting has been the cause of bringing the underlying Cretaceous strata to day, has been in the northeast-southwest direction, roughly parallel in fact to the northwestern shore line of the old Mississippi embayment in Eocene Tertiary time.
>
> "The shallow depth at which rocks supposed to be of this series [the Cretaceous age backbone] have been struck . . . [in various wells, and] . . . the great depth of the Shreveport well (1,100 ft.) with no record of Midway beds [of lower Tertiary age] or Cretaceous limestones though nearly in line with the so-called axis or "back-bone", [as well as] the various dips observed in the limestones at various exposures with but one exception-the St. Landry outcrops-all indicate northeast-southwest local folds parallel to old shore lines rather than a mountain chain at right angles to the same, or in a northwest-southeast direction." (Harris and Veatch, 1899, Section II, p. 62)

When Harris began his work in Louisiana in 1899, the area was poorly mapped, and in many areas he and his crew had to create their own base maps before doing their geological work. There is a section in the 1899 report in which Harris addresses, "The Establishment of Meridian Lines." He described the difficulties of doing land surveying using only a "magnetic needle" for determining direction:

> "Different men with different instruments at different times, have naturally, as we well know, come to very different conclusions regarding the location of many corners and boundary lines." (Harris, 1899c, p. 312).

Throughout his work in Louisiana, Harris always tried to maintain the most accurate readings possible with his surveying work which is well illustrated in his letters. Apparently in his quest for accuracy, Harris sent some of his equipment to Washington, D.C. for testing:

> "Your compass needle to your transit requires a correction of +8' for east declination and −8' for west declination, In the official communication this corr'n [*sic*] will probably not be changed by more than 1'"[2]

He even had his steel tape measured and received a "Certificate of Verification—National Bureau of Standards" which did a test on his 100′ steel tape; ". . . with 10 lbs of tension, off +0.03" in 50′ and +0.03" in 100′."[3]

The accuracy of the surveying work of Harris and his various teams, especially that of Veatch, was remarkable; almost 60 years later, no one had improved upon it:

> "The cartographic history of the Sabine River is reviewed by Veatch (1902, pp. 107–111) whose personal work in mapping the course of the stream in 1900 (published in 1902, pls. 32–36) is without peer. . . . The writer would be remiss not to add that the course of the Sabine River

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[2] L. A. Bauer, Coast and Geodetic Survey office in Washington, D.C., to Gilbert D. Harris, December 22, 1902. HA-PRI, Ithaca, NY.

[3] National Bureau of Standards [signature illegible] to Prof. G. D. Harris, State Geologist, Louisiana, December 23. 1902. HA-PRI, Ithaca, NY.

> mapped by Veatch in 1902 was also done with much topographic skill and fidelity which is substantiated by aerial photographs and the fact that the outcrops described along the Sabine River can be accurately located today [1960] from the 1902 map (figs. 2 and 3). [Parentheticals in the original.] (Anderson, H. V., 1960, pp. 18,19).

Harris continued to use Veatch and other students as his assistants with the Louisiana work, even though Veatch was attracted to the U.S.G.S. in 1902 in a full-time capacity. Often the same people would work with him in the Helderberg Field Camp during the summer and then go south with him in the winter (Plate 3). John L. Rich described his association with Harris:

> ". . . and in the summer of 1905 [Harris] led a party consisting of Whitney,[4] Reinecke,[5] and Rich, together with three students from Louisiana State University, in a project for preparing a map and geological report of the Winnfield sheet, Winn Parish, Louisiana. During that summer, the controls for the map were established. During the following winter [1906], Whitney, Rich and E. B. Hopkins completed the contouring of the sheet while Harris made the geological studies. Needless to say, all this was extremely valuable training for the young geologists concerned."[6]

Their work became part of the 1907 report (Harris, 1907a,b) and all their names, including the LSU students, appear at the bottom of the two maps.

In the report on the Winnfield Sheet (Harris, 1907a), Harris concludes that faulting and folding were not responsible for the development of large dome-like structures they were seeing:

> "The longer we study these peculiar structures [salt domes] the more convinced are we that although they may be located along lines of weakness, faults, or fractured anticlines, they are not to any great extent due to tangential, mountain-making forces, not to volcanic upheavals, nor igneous plugs, as has recently been suggested, but to the slowly-acting, little understood, concretion-forming forces as well as the power of crystallization. Hot saline or calcareous solutions, coming from earlier Mesozoic or later Paleozoic beds beneath, rising perhaps by hydrostatic pressure alone, may very readily, upon reaching a level where the pressure is somewhat relieved and the temperature decreased, deposit some of their mineral contents." (Harris, 1907a, p. 9).

This was the core of Harris' theory of salt dome formation and subsequent uplift with the major force coming from salt crystallization as the rising saline waters cooled. Experimental work by Harris on salt crystallization appeared to support his hypothesis of, ". . . the power of growing crystals." (Harris, 1908, p. 134). While this idea was gradually replaced by the concept of diapiric rise of the salt masses (due to differential density of the salt and overlying sediments), as late as mid-century, some workers in the field were re-examining Harris' idea (Willis, 1948).

Although Harris and Veatch made some of the early detailed descriptions of these domed structures in Louisiana, the commercial connection between the domes and petroleum came from Captain A. F. Lucas and his work with the Spindle Top, Texas, oil field. In 1897, Lucas had been working in the Five Islands region and discovered the salt deposits on Belle Isle and Grand Côte. At these locations Lucas recognized that while these deposits were limited in horizontal extent, they were extensive in the vertical dimension. Lucas moved on to Texas where he discovered the first of the major oil fields on a dome structure, and Harris gave full credit to Lucas:

> "More and more work was being done on the salines of north Louisiana in 1900 and 1901, when suddenly the commercial and geological worlds were astonished at the marvelous results of Capt. Lucas' boring on a slight rise of ground known as "Spindle Top," three miles southward from Beaumont, Texas. Oil at this place seemed to indicate that perhaps, although no salt was known at Spindle top, there was some relationship betweeen [*sic*] oil and salt mounds and low domes and salines. . . . January 10, 1901 [date of Lucas' first oil strike, a "gusher"], may well be considered the date of the commencement of our education regarding a new type of geological phenomena—we refer to the *origin and method of development of local dome structure*." [Emphasis in the original.] (Harris, 1908, p. 121[7]).

Thus, this was an exciting time in Louisiana as Harris was beginning his tenure as Geologist-in-Charge, for the oil industry was gaining momentum. In his letter of transmission for the 1902 report, Stubbs described the situation this way:

> "Since our last report a wonderful interest has been created in the geology of Louisiana by virtue of the discovery of oil in this State and Texas. . . .
>
> "Numerous gushers at Beaumont, Texas have excited persons in all parts of the State to action. Many wells have been bored in various parts of the State, and numerous companies have been formed for exploiting the State's wealth in this great fuel and illuminant.
>
> "Some few efforts have been successful; many have failed.

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[4] Francis Luther Whitney (A.B.'06, M.S.'11; Ph.D.'28), later a Professor of Geology and Paleontology at the University of Texas in Austin.

[5] Leopold Reinecke (1884–1935), a South African who was at Cornell (M.S.'09) and studied with Harris. Completed his Ph.D. at Yale in 1914. He worked with the Geological Survey of Canada, with Sinclair Oil company and as an economic geologist in South Africa (Collins, 1937; Nel and Krahmann, 1937).

[6] John L. Rich to Axel A. Olsson, February 21, 1953. HA-PRI, Ithaca, NY.

[7] See also Harris, 1912b.

> In this report will be found a full discussion of the oil conditions of this State, and it is hoped that the facts given will deter companies from expending large sums of money in the vain hope of obtaining oils in unfavorable localities where the so-called oil experts have pronounced an abundance of this greasy fluid. A knowledge of the geology of a section is often of valuable aid in determining where not to bore." (Harris *et al.*, 1902, pp. iv–v).

In reality though, only one portion of the 1902 report, Special Report 8 "Oil in Louisiana" which Harris wrote, dealt directly with the oil geology. It is interesting to note that this report provided the drilling results of several wells, including complete well logs giving descriptions of the various layers and at what depth the strata were encountered (Harris *et al.*, 1902, pp. 261–275). This was Harris' first direct encounter with an industry that was to dominate his non-academic life for many years.

A measure of the general excitement engendered by these discoveries can be judged from a letter sent to Stubbs in 1902, who, in turn, sent a copy to Harris. A Mr. C. M. Hicks, Treasurer, Sicily Island Oil Company, Wisner, Louisiana, was happy to hear that Stubbs was:

> ". . . inogorating [*sic*] a Geological Survey in the La. Parishes. We will be vary [*sic*] glad to give any information or assistance in our power to aid this highly appreciative enterprise. I hope your geologist are [*sic*] ready to take up (our Franklin Parish) the work that they will come direct to Wisner [Louisiana] as we will meet them if they will wire us. . . . We would be pleased to have them with us at an early date as there has been one oil well sunk and arrangements are being made to put one down an other [*sic*] one on Sicily Island. We have had no good results so far."[8]

An article in a local New Orleans paper, *Times Democrat*, commenting on some cooperative efforts that Stubbs had mentioned also generated some letters in which the writers were happy to see that Stubbs:

> ". . . has secured the co-operation of the Agricultural Bureau at Washington, in securing the services of an expert to examine the resources of our state, and that one of the gentleman is an expert in examining oil lands. . . . [ask for him to] examine some lands we have at Lafayette, La. at the LaFayette Refinery, for the purpose of ascertaining whether these lands are oil bearing. In this connection, we would explain that we have sunk at that point three 8" [diameter] artesian wells for the purpose of supplying the refinery with the necessary amount of water. These wells are connected to a powerful air compressor and when ever the full force of the air compressor is confined to one of these wells, the oil flows out with the water. This leads us to beleieve [*sic*] that there may be oil in paying quantities, and of course we would like to have an examination made."[9]

Despite all the rising interest, the first successful wells in northern Louisiana were not drilled until 1904, which in turn led to the development of the Caddo field which hit its maximum production in 1913 (Powers, 1920b). Veatch (1906b) had described the geology of this area in his massive groundwater report for the U.S.G.S.

Based upon his earlier experiences with the U.S.G.S., Harris was familiar with "cooperative" operations between the federal and state surveys, and his Louisiana Survey was asked for its cooperation. One such request occurred in 1903 when Veatch was working with the U.S.G.S. Harris was in correspondence with F. H. Newell, who said, "Mr. Veatch is now working for us in southern Arkansas and northern Louisiana, . . ."[10] Then he went on to ask Harris to do some work for the U.S.G.S. gathering statistics on ground water in central and southern Louisiana.[11] Harris must have sent a proposal, perhaps asking for a rather high payment for his services, for there is a response from Newell a few weeks later offering only $600:

> ". . . for expenses and compensation during completion of field work and the preparation of the report on underground waters of Louisiana. . . . I should be very glad to have you undertake the work, notwithstanding the fact that the rate of remuneration you ask is higher than is ordinarily accorded a geologist under similar conditions. . . . There is no objection to the preparation of the report during free intervals while engaged in other work, providing it is ready to be submitted before January 1, 1904"[12]

Then Harris must have asked for more expense money in order to obtain better data, but Newell wrote him:

> "I appreciate the necessity of further field work in Louisiana for the purpose of determining the amount of the

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[8] To W. C. Stubbs, Director, Louisiana Sugar Experiment Station, Audubon Park, New Orleans, from C. M. Hicks, Treasurer, Sicily Island Oil Company, Wisner, Louisiana, December 31, 1902. HA-PRI, Ithaca, NY.

[9] To Prof. W. C. Stubbs, Audubon Park, City [New Orleans] from H. E. Gumbel, L. Gumbel & Company Ltd, Cotton & Sugar factors and Commission Merchants, New Orleans, December 31, 1902. HA-PRI, Ithaca, NY.

[10] Actually according to Harris, Veatch was working for both the U.S.G.S. and the Louisiana Geological Survey (Harris *et al.*, 1905, p. 1).

[11] F. H. Newell, U. S. Geological Survey, to G. D. Harris, Audubon Park, Louisiana, January 24, 1903. HA-PRI, Ithaca, NY.

[12] F. H. Newell to G. D. Harris, February 9, 1903. HA-PRI, Ithaca, NY.

> supplies derived from the wells. I would suggest, however, that approximate amounts are of nearly as great value as exact determinations, and can be obtained in a much shorter time and at less expense. The details of carrying on the field work and the preparation of the report are left to your judgment, but the sum of $600.00, which I mentioned in my letter of February 9th., is all that I feel at liberty to assign for the work in Louisiana, and, if possible, I should like to have you make the field and office expenses, including salary, come within this amount. Please let me know definitely at your earliest convenience whether or not you can undertake the work on the allotment mentioned, in order that we may arrange for its payment from this year's appropriation."[13]

Is this what is meant by the old saying, "Close enough for government work?" He must have accepted the $600, however, for Harris said in the introduction to the groundwater report:

> ". . . the writer spent the month of June 20 to July 20, 1903, in the same field in behalf of the U. S. Geological Survey." (Harris *et al.*, 1905, p. 1).

While this negotiation concerning the groundwater work was being conducted, Harris sent his own proposal to the U.S.G.S.:

> "Your application of December 24 [1902] for means to continue a systematic paleontologic and stratigraphic investigation of the eastern Cenezoic [*sic*] has been carefully considered by Messrs. Stanton, Willis, Dall and Vaughan. There is entire unanimity regarding the value of the work which you propose and its desirability at the present time. There is also a unanimous opinion that the work should be done under Survey auspices and that the results, both collections and notes, should belong to the Survey."[14]

No money was forthcoming, but at least the scientific merit of his proposal was accepted.

He also arranged cooperative agreements with other governmental agencies, such as the Coast and Geodetic Survey. In the Harris Archives is a copy of a letter to one Mr. Edwin Smith, Assistant, United States Coast and Geodetic Survey (USC&GS), from Superintendent [unnamed], December 23, 1902 which directs Smith to go to Louisiana and work with Harris in setting up a meridian line. This was part of a joint agreement with the USC&GS and Harris to do magnetic survey work in Louisiana. "Articles of agreement" from the Superintendent were sent for Harris to sign in letter on December 23, 1902. Through this joint effort, Louisiana became only the third state in the Union to, ". . . have a satisfactory survey made including all three elements-*declination, dip,* and *intensity*." [Emphasis in the original.] (Harris, 1905b, p. 171).

This was not the first time Harris had seen the need for such magnetic surveys. While working in Arkansas, Branner asked him to determine what it would cost to establish meridian lines in every county seat, and Harris estimated about $3500 and a year's work. This was not the kind of commitment Branner could support, so nothing was done. Then, when Harris came to Louisiana in 1898, he found little magnetic survey or meridian work had been done, but with an annual appropriation of only $2000, once again it seemed an impossible task. But if he could not do the work one way, he would do it another:

> "Accordingly, an engineer's transit (Heller and Brightley's) was borrowed from the Engineering Department of the State University at Baton Rouge and observations were made and markers were left at every parish seat traversed in general geologic work. The only losses thus entailed to geologic work proper were one day after a night's observations, devoted to finding and setting permanent monuments or markers, and the transportation expense of a few extra instruments." (Harris, 1905b, p. 173).

Harris continued this type of survey work for three years, and when the task became totally overwhelming, he asked the United States Coast & Geodetic Survey for assistance.

Much of the effort of the work by Harris and his assistants dealt as much with determining correct elevations and doing topographic mapping as it did with rocks and fossils. The topographic data available to them were minimal and often base maps had to be prepared before the geology could be mapped. For example, the appendix to Part II of *Bulletin* Number 1 is simply a compilation of altitudes in North Louisiana (Veatch, 1905). Part of this mapping activity relied on having proper compass headings, which, in turn, required establishing magnetic variations and meridian lines. This was very much "non-rock work", but still vital to the overall success of the Survey activities.

The attention to establishing meridian lines and their importance to the general mapping of the region was a lesson well learned by his students. Several years later one of his student assistants, J. Pacheco, who by then was working with the Commisão Geographica e Geologica do Estado de São Paulo, related the following:

> "This survey is now doing something in the way of determining meridian lines, and I thought I could possibly do something in the way of studying the influence of the

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[13] F. H. Newell, Chief Engineer, U.S.G.S., to G. D. Harris, Sugar Experiment Station, Audubon Park. HA-PRI, Ithaca, NY.

[14] C.M. Hayes, Geologist in Charge of Geology, U.S.G.S. to G.D. Harris, January 28, 1903. HA-PRI, Ithaca, NY.

> various rock masses in deviating the magnetic needle. We have here to contend with great trap dikes and overflows, which on decomposition gives a deeply red soil highly rich in iron oxide. Of course the needles behave crazily in such areas, but I thought that perhaps we could find some method in such behavior."[15]

In 1905, Harris changed the titles of the Survey reports he was producing. Up until this time he had been continuing a line of reports started by Lerch, *e.g.*, the 1902 report was Part VI of the series. He also changed the heading; "Geology and Agriculture" became "Geological Survey of Louisiana" to better reflect the type of work he and his assistants were doing. In addition, each report became known as a *Bulletin*, Report of [year] and numbered consecutively. Perhaps the choice of a name for the series of publications was influenced by his academic experience, and his own *Bulletins of American Paleontology*. In light of subsequent history, the letter of transmission from Stubbs, Director of the State Experiment Stations (the state office which controlled the survey) for the first *Bulletin* has an interesting statement in it:

> "The bulletins which follow will deal with salt, lignite, oil, etc., but these products are of most trifling account when compared to the great underground water supplies of the State." (Harris *et al.*, 1905, p. vii).

Today, however, no one would refer to the oil industry in Louisiana as a "trifling account."

At times, however, Harris' ideas on the importance of the Survey and its activities did not quite coincide with what the State expected, at least in so far as Stubbs represented the State's view. In a letter indicating that Harris had $2500 available after paying various expenses and salaries, Stubbs outlined various suggestions as to how he felt the money should be used:

> "You next speak of the volumes to be published, one on Economic Geology, another on Stratigraphy and topography, and another on Paleontology. I consider the first and second of the utmost importance just now, not because in themselves they are really so valuable, but because they will do to furnish to the large number of immigrants and land agents that are now invading this State with such information, and the object of this appropriation in the State is more to develop the material resources than for scientific research, although the latter is not lost sight of in the appropriation."[16]

Stubbs must have had his way, for in 1905, the published reports concerned only groundwater, altitudes, tide, and magnetic data, with not a single mention of paleontology (Harris *et al.*, 1905, pts I and II; Harris, 1905b, c, 1907b; Veatch 1905, 1906a).

By 1905, Stubbs was no longer in charge of the Experiment Stations and the new Director, W. R. Dodson, was not familiar with Harris and his work. Dodson inquired:

> "I am not acquainted with all the correspondence regarding the contract with you, and would be obliged if you would give me a statement of the months you are to spend in the filed [*sic*], and those which you are to spend in working up your reports.
>
> "I would also be obliged for a short resume of the work you have done this winter, the reports you have in preparation, and the number of publications now being issued, approximately what they will cost, when they will be ready for distribution and so forth.
>
> "What arrangements have you had regarding the survey paying the traveling expenses between Louisiana and Ithaca. I note on the first statement that you have your railroad expenses. Do I understand from this that we are to pay your expenses to and from Louisiana each season. Had I known you were going to return at this time to Ithaca, I should have requested you to come by Baton Rouge. I wanted to have a day or so with you and learn all about your plans, the work done this winter and many other things. I have given most of my time to the work that has needed my attention the most and have not yet given your work the consideration I wanted to. I hope in due time to become fully informed as to the what [*sic*] I can best do to promote the best interest of the work."[17]

Only a few years after Dodson replaced Stubbs as head of the Experiment Stations, there were hints of financial problems that were affecting the Survey work and publications:

> "I [Dodson] approve of your anxiety to get the Louisiana work before geologists of the country, and especially before the national department as fully as possible. I have no special reason to believe that the appropriation for the work in Louisiana will be discontinued, but it is always a fight to get appropriations and there is so much politics in the legislature that things are not always put on their merits, and we must always count on the possibility of having the appropriations cut off."[18]

And it seems Harris was, once again, having problems getting items printed by a governmental agency. This time it was a matter of having to use a "state printer" instead of a private print shop:

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[15] J. Pacheco to Gilbert D. Harris, March 22, 1909. HA-PRI, Ithaca, NY.

[16] W.C. Stubbs, Director, Louisiana Sugar Experiment Station, to G.D. Harris, October 13, 1903. HA-PRI, Ithaca, NY.

[17] W. R. Dodson, Director, Agricultural Experiment Stations, Baton Rouge, Louisiana, to G. D. Harris, March 29, 1905. HA-PRI, Ithaca, NY.

[18] W. R. Dodson to G. D. Harris, January 21, 1908. HA-PRI, Ithaca, NY.

> "I [Dodson] have your letter of the 21st, and note your suggestion for having the bulletin printed in New Orleans. I hardly think we could do this. The printing of the experiment station, and of the State Board of Agriculture was awarded to the state printer by a committee from the State Board of Agriculture appointed for the purpose of awarding the contract for printing. . . .
>
> ". . . Possibly by printing 5,000 copies instead of 7,000, . . . it will be an easier proposition."[19]

The *Bulletin* of 1908, Number 8 (Harris *et al.*, 1909) was the last of the series Harris and his students produced, for there was a change in leadership at the state level and the general funding for the work ceased. Among the final numbers of the Survey *Bulletin* was Harris' large work on rock salt (Harris, 1908), and later he continued his work on salt with a paper in *Economic Geology* (Harris, 1909).

The published work on salt certainly struck a responsive chord with his friend Branner, who was then Vice President of Leland Stanford Junior University:

> "I have no hesitation in saying that I regard it [the *Economic Geology* paper] as one of the most valuable and far reaching contributions that has been made to geology in this country for many years.
>
> "Since 1885 I have looked high and low for such evidence as you have here brought forward; but it is one thing to have a theory, and it is quite another to have facts and a theory too."[20]
>
> "Your salt bulletin [No. 7, 1908] was duly received and I thank you very much for it. It is not only good on the salt of Louisiana, but the best there is now on the general subject."[21]

One rather interesting map (Plate XXIV) in this 1908 report shows the relationship between the salt domes and the oil and gas areas of Louisiana and southeastern Texas, an idea which he continued to develop (Harris, 1909, 1912a, 1912b, 1913, 1915). Also, in this 1908 report, Harris gave what appears to be the first good description of what he called the "Sabine Peninsula." In a later report (Harris, 1910), he called it the "Sabine Uplift." This is one of the major structural features of northwestern Louisiana and northeastern Texas, and it has played a major role in various geological theories such as Powers' (1920b) "Positive elements in petroleum geology".

Harris certainly exploited his idea about salt domes during his days as a consultant to oil companies in Louisiana. In a report he did for the Pardee Land Company in 1912, he said:

> ". . . there are breaks in the underlying deposits and through these artesian saline solutions have arisen, concentrating, crystallizing, & [*sic*] pushing back and upadjcent [*sic*] deposits. . .And in Coochie brake [*sic*] the elevations clearly of salt origin have . . ."[22]

His ideas about the domes resulted in successful exploration because, as Harris indicated in an article about salt domes, the Myles Mineral Company,

> ". . . has had the courage to try out the theory and has discovered by the means a new oil field [Pine Prairie]. The director writes, 'I consider this a most remarkable vindication of a theory originated by you, and we [Myles Mineral Company] attribute a large measure of our success thus far to your advice.'" (Harris, 1912a, p. 546).

No doubt such statements appearing in print did much to enhance Harris' reputation as a consultant.

Although Harris was not an active researcher in the origins of salt domes after about 1915, he did try to keep abreast of the work of others. Several years later Harris was apparently not altogether pleased with a description of his salt dome theory by Sidney Powers and inquired about it. Powers replied:

> "You asked me the reason for certain of my views on salt domes expressed in my American Journal [of] Science paper [Powers, 1920a]. The mechanics of salt dome growth are admittedly unknown to me. But when Rogers pointed out that enormous volumes of water would have to be gotten rid of according to your theory I tried to choose the path of least resistance, and accepted tentatively the European view. But I do not think the cap rock was raised or grew with the salt."[23]

Somewhat later, Harris replied:

> "Now, as to the most plausible theories as you have stated the *volcanic* and the *uplift* I have always been at a loss to know how salt chunks covered unusually qua-qua-versally [*sic*] with calcareous thimble-like caps could possibly originate volcanically. I have made most complete magnetic surveys around some, especially Weeks Id [*sic*] [Island] to see if the usual deflections produced by volcanic phenomena are present, but they are not. As to the usual uplift theory, there may be no extremely serious objections to it in a dome devoid of great masses of cavernous, crystalline capping among the inner belt of domes, but how about the coastal rep esentatives [*sic*], where some of the salt

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[19] W. R. Dodson to G. D. Harris, January 25, 1908. HA-PRI, Ithaca, NY.

[20] J. C. Branner to Gilbert D. Harris, March 1, 1909. HA-PRI, Ithaca, NY.

[21] John C. Branner to Gilbert D. Harris, April 12, 1909. HA-PRI, Ithaca, NY.

[22] Typed copy of *Report on the Oil and Gas Prospects of the Pardee Co.'s Lands near Pine Prairie, La.* by G. D. Harris, August 24, 1912; attached to a carbon copy of a letter from O. C. Hathaway to "The Pardee Company, August 27, 1912. HA-PRI, Ithaca, NY.

[23] Sidney Powers to Gilbert D. Harris, September 13, 1920. HA-PRI, Ithaca, NY.

> chunks have been penetrated, have these lost their mooring from deep lying Cretaceous or Permian beds, and have they on account of lightness in specific gravity been shakeu [*sic*] up top as popped kernels of popcorn rise to the top while the heavier unpopped kernels stay at the bottom of the popper? Or have they been squirted up in a semi-solid state from those great depths as our foreign brethern [*sic*] suppose stopping strangely enough just wrere [*sic*] the squirting is easy, not far beneath the surface? Again, with all this upward shaking or squirting movement is it not strange that porous, crystalline, cavernous calcareous matter without traces of organic remains can come fr m [*sic*] no known sedimentary rock directly yet be there on top of the salt nicely in place in spite of the cavorting of its salty mount?
>
> "Does not the fact that these secondary crystalline masses are associated with geosynclines as you say rather suggest artesin [*sic*] action than volcanic or ordinary uplifting?
>
> "However, there is lots to be learned about these domes yet. Let others if they will, find more and describe them as you have done and the [*sic*] we will trust future results. I [*sic*] a hundred years or so I hope some one [*sic*] will redetermine the precise bench-marks I established some ten years ago to determine if differential uplifting was going on there now."[24]

Two years before Harris' death and almost 50 years after he had done his work on salt domes, the American Association of Petroleum Geologists was producing a new volume on salt domes, and wanted to include an "appreciative biography" in recognition of his pioneering work with these features. Walter Hopper[25], a former student who had worked with Harris in Louisiana in 1908, contacted him about the volume:

> "I assure you that my work with you as a student and later in Louisiana is very clear in my mind.
>
> "I realize that I am not writing a memorial. This makes it necessary, or at least advisable that I be more careful in what I say. *You* may read my story." [Emphasis in the original.][26]

By 1909, Dodson was not very optimistic about financial the health of the Survey:

> "I regret very much that the work that has been done is not more fully appreciated by some of those who hold the purse strings. The chairman of the appropriation committee has no appreciation for scientific work of any kind, and it is not his fault that the appropriation for other scientific work was not cut off. . . .
>
> "I have not been able yet to get any money from the State Treasurer on our appropriation, but I feel confident that when the Board of Liquidation meets that they will make arrangements for filling the appropriation, and we will be able to pay our bills."[27]

But the funds were not forthcoming and Harris' Geological Survey of Louisiana came to a close.

At no time was Harris' organization really well funded. According to Pope (1988), the maximum appropriation seldom exceeded $2500 per year. In a letter[28] in 1905, Harris told H. S. Williams that Louisiana gave him $5000 to spend as he saw fit. That must have been a well funded year, or perhaps Harris inflated the facts to impress Williams. In the "Prefatory Remarks" of his very first report in 1899, Harris sang a different song and bemoaned the lack of adequate financial support at that time:

> "The prosecution of a well organized geological survey demands an expenditure of funds far in excess of those now at our command. This the reader is requested to constantly bear in mind." (Harris and Veatch, 1899, p. 7).

Yet, financial support notwithstanding, Harris and his assistants made quite a contribution. Seventy-nine years after the close of this phase of the state survey work, this is how the Harris years were remembered; note the quotation from the first Harris report:

> ". . . [Much] extremely valuable topographic and cartographic work was accomplished, . . .
>
> "The work of Harris was amazingly accurate especially under conditions of the times. His efforts, and those of his assistants, contributed not only significantly to the geological knowledge, but greatly to the development of the natural resources of the state. The attitude of these tireless and astute workers is best expressed in the letter of transmission of the 1899 report in which the Director of the Experiment Station, William C. Stubbs said of Harris and Veatch, 'These two gentlemen have persistently followed their work through freezes and sunshine, over intolerable roads, impelled by an enthusiasm known only to lovers of science.' Conversely, credit should be given for the support rendered by the Director of the Experiment Station. Harris in his letter of transmittal to Dr. Stubbs in the Report of 1905 stated, '. . . you have cheerfully. promptly, knowingly expedited all matters relating to our State Survey with no compensation whatever save the knowledge of seeing the right thing done at the right time'" (Pope, 1988, p. 190–191).

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[24] Unsigned carbon copy, Gilbert D. Harris to Sidney Powers, November 2, 1920. HA-PRI, Ithaca, NY.

[25] Walter E. Hopper (A.B. '08; M.A. '10) was consulting geologist in Tulsa, Oklahoma at the time of the correspondence.

[26] Walter E. Hopper to Gilbert D. Harris, July 1, 1950. HA-PRI, Ithaca, NY. However, for unknown reasons, the volume was never published. The A.P.P.G. library has no record of it.

[27] W. R. Dodson to Gilbert D. Harris, February 1, 1909. HA-PRI, Ithaca, NY.

[28] G. D. Harris to H. S. Williams, April 12, 1905. H. S. Williams Papers, 14/15/728, Geological Correspondence Box, RMC-KL, Cornell.

Pope (1988) gave no reason for the closing of the Survey in 1909; other than the unspoken and obvious one, that the legislature did not appropriate any more money. It was not until 1914 that the Survey was re-established as the Louisiana Soil and Geological Survey.

Thus closed one aspect of Harris' commercial work, which, in turn, led to the opening of a new challenge for him as a geological consultant to various oil companies.

CHAPTER 6. CONSULTANT

The commercial aspects of geology and the work of academic geologists as professional consultants are often overlooked by historians of the subject, and yet commercial interests have been a driving force in the development of most geological surveys, on both sides of the Atlantic (Tweedale, 1991). While Harris was certainly not the first academic geologist to seek work in the commercial sector, he was very much at the forefront of the development of the oil industry in Louisiana in the early years of the Twentieth Century, and as it was such an important part of his life, that activity deserves more than a passing mention. The fact that Harris did most of his consulting by mail and by telegram makes this aspect of his career even more interesting. As these various letters between Harris and his clients are read, wonderful images come to mind of drillers sitting on the edge of the drill rig down in some Louisiana swamp with the crew playing cards, all waiting for the mail to arrive with Harris' instructions.

Exactly when Harris made the transition into the field of geological consulting is not known with any certainty, but from existing letters, it appears that consulting opportunities began to present themselves while he was serving as Geologist in Charge for the State of Louisiana. Information on a small printed sheet, probably prepared and printed by Harris and entitled "Stratigraphic Geology and Paleontology at Cornell," lists the following: "1916–1920 Louisiana professional geological work."[1] But there is evidence that he was involved with consulting activities long before 1916. It is difficult, however, to tell if the work he was doing, much of it by mail, was part of his Survey duties, or whether he was involved in private ventures.

Certainly as the oil industry began expanding with great rapidity during the first decade of the Century, there was increased pressure to supply geological information and assistance, perhaps with requests for more detailed information and quicker access than the published material would provide. Here is an example of one of the many letters requesting assistance which were sent to William Stubbs, Director of the Experiment Stations, the parent agency for the Louisiana Survey:

> "We have some very fine oil indications near Shreveport and I trust you [William Stubbs] will send one of your government geologists up here. I can send a jar of stuff taken from the top of the water here if it will be of any service. . . ."[2]

In 1905, four years before the demise of the Louisiana Survey, Harris received this letter from J. Numa Jordy in New Orleans:

> "I have your letter of the 27th. You have evidently misunderstood what we want in this matter. We are forming a stock company here to develop that Quarry and we want to know its commercial value as a Marble, for Lime or for any other purpose to which it may be put. Now, you are evidently very familiar with this property, and if you will get up a handsome report and make it as strong as your conscience will permit without overrating it, we will give you $1000 in the stock of the Company.
>
> "Please do this at once, and ascertain, if you please the other information that we are anxious to put in our prospectus, i, e, [*sic*] as to whether some of this marble was sent by the State of Louisiana to form a part of the Washington Monument, in the meanwhile tho' [*sic*] send the report we want, as we are waiting on it. . . .
>
> "State in your report that you have made a visit to this property and know all about it. Sign it officially."[3]

There is no record as to whether the report was sent; probably not, given the tone of the letter, but it does illustrate the kind of situations that were available to him during these early days of the oil boom in Louisiana and Texas. Even Stubbs seemed to be impressed with the rising interest:

> "I enclose you quite a number of letters lately received [*sic*]. Some of them may be of use to you, while others

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[1] Undated printed page. Pen corrections on it suggest a date of about 1945; its purpose is unknown. HA-PRI, Ithaca, NY.

[2] Henry Shepherd to William Stubbs, January 3, 1903. HA-PRI, Ithaca, NY.

[3] J. Numa Jordy to G. D. Harris, October 31, 1905. HA-PRI, Ithaca, NY.

> may be worthless. I send them as a proof of the widespread interest manifested in the work now going on in Louisiana."[4]

Even before the Survey closed Harris was corresponding with an I. N. Knapp, who appears to have been an independent operator, originally in Louisiana, and later in Philadelphia. There are a series of letters from Knapp to Harris starting in April of 1907 and continuing through 1910. No company name is given on the letterhead, just his name, I. N. Knapp. In some letters, Knapp described the fossils he was able to save from the well cuttings and said that he had them all labeled, waiting for Harris to stop by and see them. From this it seems that Harris was making visits to well sites:

> "My [Knapp] office man at Morgan City is Mr. J. F. Allen and you can Phone [*sic*] or wire him regarding going down to the well and he will have a boat ready for you on arrival of the train. The porter from the Gostellos Hotel meets all trains ask him [about the boat]."[5]

Samples were sent to Harris in bottles, small boxes, and even folded in the letters themselves:

> "Please find enclosed some fossils for determination. I would be glad to know their geological horizon."[6]

Harris and Knapp had more in common than just their mutual interest in the oil business:

> "I have two sons now at Cornell, Arthur Knapp, M.E. '07, Instructor in steam engineering [and] Walter Knapp student in the E. E. course. I was about 1 1/2 years at Cornell with class of '75."[7]

By 1915, Knapp's son, Arthur, worked on one of the first rotary drill rigs used in Russia.[8]

When the Survey ceased operations in 1909, Harris would have needed additional income to replace what he had been receiving as Geologist-in-Charge. Also, it was at this time that Harris ceased operations with the large geologic field camp held in the Helderbergs, and reverted back to less elaborate summer excursions with very few students. It is difficult to know whether a connection exists between the two events, but the timing certainly suggests one. By having the smaller summer activities, Harris would have had more time to devote to consulting.

The following letter is typical of the correspondence which was reaching Harris from Louisiana. Although not addressed to him, it was probably forwarded by Dodson, who had succeeded Stubbs as Director of the Experiment Stations:

> "With a view of trying, by boring, excavating etc., in the earth to ascertain whether in our part of the country there's minerals and deposits to justify the presence and aid of 'A 1' geologist, we thought it would be advisable to confer with you-relative to such an undertaking-feeling that you have the interest in and the development for such at heart. . . . Others have succeeded in such undertakings, and who knows what might happen in old Union Parish?"[9]

And as he explored the world of consulting, Harris did not overlook his own home state: "I have tried to obtain the information you asked me for about gas wells about Buffalo . . ."[10]; there followed a three-page (albeit small ones) description of various wells and their bearing strata.

By June of 1909, it appears that Harris was well and truly in the oil consulting business in Louisiana, for this date marked the beginning of a large volume of letters from "The Myles Mineral Company, F. F. Myles[11], President; MINERAL LANDS SCIENTIFICALLY EXPERTED, BOUGHT, LEASED AND DEVELOPED." At the left side of the Myles letterhead is a drawing of a wooden oil drilling tower with black liquid gushing out the top. The first of the letters from The Myles Mineral Company begin in 1909, but from the tone of the nine letters written between June and December that still exist from that year, it appears Harris had been working for the company prior to June, 1909, for the first letter reads as though it was part of an ongoing correspondence. There are 22 surviving letters from 1910; and similar numbers through 1915 at which point the record stops. Many letters had drilling reports enclosed with them informing Harris what depth had been reached and a description of the material found at the various depths. A large part of the surviving record consists of nothing but the drilling reports with no accompanying letter.[12]

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[4] W. C. Stubbs to G. D. Harris, January 12, 1903. HA-PRI, Ithaca, NY.

[5] I. N. Knapp to G. D. Harris, August 22, 1907. HA-PRI, Ithaca, NY.

[6] I.N. Knapp to G. D. Harris, September 27, 1907. HA-PRI, Ithaca, NY.

[7] I. N. Knapp to G. D. Harris, September 27, 1907, p. 7. HA-PRI, Ithaca, NY.

[8] Vivien L. Knapp (Mrs. Arthur Knapp) to Gilbert D. Harris, December 12, 1915. HA-PRI, Ithaca, NY.

[9] J. M. Anderson to J. G. Lee, February 3, 1909. HA-PRI, Ithaca, NY.

[10] Catharine M. Allen to G. D. Harris, June 22, 1909. HA-PRI, Ithaca, NY.

[11] Frederick F. Miles was a figure in the business world of New Orleans for many years and before venturing into the oil business, he began the salt industry in Louisiana with his mines on Weeks Island. He was a General in the Louisiana State Militia and was appointed as Quartermaster-General of the militia by the governor. He died in New Orleans July 1, 1915 at age 64. *The Times-Picayune*, page 4, July 2, 1915. The Historic New Orleans Collection, 533 Royal Street, New Orleans, LA.

Although Harris' replies by mail and telegram with his recommendations are unknown, from reading the Myles side of the correspondence, it seems that he was actually advising the company almost on a daily or at least weekly basis. When he was not teaching, Harris would travel South for actual field examination and to meet with his employers. This was possible after the demise of the Louisiana Survey because Harris continued on a half-time appointment at Cornell, with his teaching duties confined to rather reduced summer field activities and the fall term:

> "We are ready for the fourth attempt, and want you to locate the well; so, upon receipt of this if you are in position to do so, please wire me here when we may expect you."[13]

> "When you have examined these shells, please advise me here by *return of mail*, what you think of them; and if you think them good indication *please wire me here collect*, as we are getting a little discouraged with this hole." [Emphasis in the original.][14]

The Myles Mineral Company Secretary, H. M. Journee, appears to have been an interesting person. From his letters he seems to have been quite well educated, if not formally; and he certainly had given considerable thought as to how and where oil might be found, especially where the structural domes were concerned:

> "Since last hearing from you, I have been pondering a good deal on your intimation that you now think it possible that we have a considerable uplift in our section,—possibly extending several miles to the Northward, I take it.
>
> "Now, this has always been my idea, in a vague sort of way, and we were influenced by it in taking leases to the northward. As you will remember, we have no leases to the southward, except immediately adjoining us.
>
> "We are therefore extremely anxious to get your views after an examination of the shells sent you; for, should you feel confident of an uplift of considerable proportions, we would take several thousand acres more of leases."[15]

Earlier he had asked Harris for geologic literature on the eastern oil and gas fields, as reading them could, ". . . serve the purpose of my enlightenment."[16]

Harris must have had some success with his recommendations, for Journee wrote:

> "I note your [Harris] progress as a promoter and beg to offer my humble congratulations. There are some rocks, and shells, and such as that in the path of a geologist; but the real rocky roads, and the real shell games, lie in the path of the promoter."[17]

From his letters it appears that Journee had some geologic knowledge, or at least he had mastered some of the terminology:

> "Your letter of the 20th inst. has been forwarded here [Pine Prairie, Louisiana], and has been read with great interest.—particularly as I had been hoping that these shells would show us to be in the Cretaceous."[18]

And another time:

> "At the same time I am enclosing a perfect shell; so small as to be apparently insignificant, but in which you may find some interest. It was found in the cuttings from the 2050 ft. level; and I thought it might possibly be '*Fusus harrisi*.' "[19]

Given that Harris was actually on site only a few weeks each year, he had to use local people, such as Journee, to do his field work:

> "I too am much interested in knowing the relative location, as touching the dome formation, of the Anse La Boutte and Vinton wells; and it is my intention very shortly to go over to both places and make a careful examination, when it will afford me much pleasure to give you such information as my capacity may justify."[20]

Journee certainly had a sense of humor, which might have been a useful trait in his business:

> "Herewith I enclose as of possible interest, two specimens of what I took to be petrified wood. Can it be that we have come to the 'Stone Age.' Must have been rocky times, those."[21]

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[12] As I was taking these letters out of the envelopes during the summer of 1994, I often found small gravel samples folded inside the letter and a stream of particles would fall out as the page was unfolded.

[13] H. M. Journee, Secretary, The Myles Mineral Company to G. D. Harris, December 10, 1909. HA-PRI, Ithaca, NY.

[14] H. M. Journee to G. D. Harris, February 15, 1910. HA-PRI, Ithaca, NY.

[15] H. M. Journee to G. D. Harris, March 10, 1910. HA-PRI, Ithaca, NY.

[16] H. M. Journee to G. D. Harris, July 30, 1909. HA-PRI, Ithaca, NY.

[17] H. M. Journee to G. D. Harris, January 18, 1910 HA-PRI, Ithaca, NY.

[18] H. M. Journee to G. D. Harris, February 25, 1910 HA-PRI, Ithaca, NY.

[19] H. M. Journee to G. D. Harris, June 12, 1910 HA-PRI, Ithaca, NY.

[20] H. M. Journee to G. D. Harris, October 12, 1910 HA-PRI, Ithaca, NY.

[21] H. M. Journee to G. D. Harris, May 12, 1910 HA-PRI, Ithaca, NY.

Harris' ideas on the relationship between salt domes and the presence of oil proved worthwhile, but on occasion he apparently did not respond quickly enough to Journee's letters:

> "I have just returned from Vinton, and what I saw there 'looked mighty good to me.' All of the producing wells of any size are right alongside [*sic*] the salt dome,—one could stand on the dome and throw a biscuit (one of the kind we had at Eunice) across the best part of the field. While prospecting is going on very widely, the proven field is describing a crescent, and will, I believe eventually encircle the dome. Few, if any, people there, has [*sic*] any idea of the dome theory; and there may still be obtained on the South of the dome land that looks just as good to me at this time as the proven field. I would take some of it myself, were it not for the fact that I am convinced that we have a field of our own, and just as good. . . .
>
> "Any further information you may desire, I will gladly furnish; but it appears to me I am writing a good deal lately, and getting mighty few replies."[22]

Harris, it would seem, was not only being paid as a consultant, but was also offered an opportunity to invest in the wells:

> "Herewith I am handing you samples from about 110 feet, in the present well, #7. Please let me know whether or not they look good to you, as we intend to bring a gusher in here soon, and want you committed in advance."[23]

While Harris' idea about salt domes and oil seemed to be a good one, according to this letter, his advice was not 100% correct all the time. Journee was ready, however, with a fair geological reason to explain the anomaly:

> "Herewith I am handing you a clipping, showing that a well [at Pine Prairie] has been brought in at Vinton, after passing through 1,000 feet of rock. This would seem to upset your theory that little oil is to be found beneath [that] much rock, but, if my idea as to the location of this well is correct, it is right at the edge of the salt mass, and the oil has evidently penetrated a cavity in the rock from the side."[24]

Apparently Harris' lack of communication in 1910 can be traced to the building of his house at 126 Kelvin Place:

> "Am glad to learn that the new home will soon be completed, and I trust that, when once you have a place to live, you will be like most other people who build houses, prepared to travel about; and that you will be with us more than of recent days."[25]

But all was not going well at the well, so to speak:

> "The well is down to 1269 feet, in standstone [*sic*], saturated with oil, and showing much gas, and much 'smell.' If we don't get it this time, then you are discredited as a prophet. In other words, by one fell swoop, we will lose our phophet [*sic*] and our profits too. However, let us hope that this double disaster will not befall us."[26]

The well was a disaster, but for other reasons:

> "I have no good news for you. It looks that we are to lose the present well. At 1687 feet, and while drilling, a lot of rock fell in, jammed the drill stem, and they [the drill stem] pulled in two in trying to get out. We are still working on the hole, but have little hope to save it. . . .
>
> "We now want you advoce [*sic*], as to whether to drill alongside this hole, or try another part of the field."[27]

The Myles Mineral Company had better luck with well # 2, and they struck oil at 306 feet.[28] It is interesting to note that almost all of the letters from Journee begin, "Dear Doctor", and Harris apparently did not correct him as to his proper academic title.

The Myles Company had other successes:

> "I know you will be gratified to learn that we brought in a gusher on yesterday. Just what it will finally yield we cannot determine exactly, as we did not let it run to its full capacity, and now have it capped. However it flowed pure oil in a solid 4 inch stream, more than 60 feet high, and was constantly increasing when we shut it off.
>
> "I consider this a most remarkable vindication of a theory originated by you, and we attribute a large measure of our success thus far to your advice."[29]

Apparently Harris had a letter in the mail which crossed Journee's in which he was saying they would have to drill deeper:

> "Your letter of the 6th is received, and for once I find you a bad prophet, as we have already brought in a big well at a much less depth than you predict.
>
> "We are now arranging for tankage, and in about two weeks we expect to start it flowing. As you are the father of this field, it would be most appropriate that you should

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[22] H. M. Journee to G. D. Harris, February 8, 1911. HA-PRI, Ithaca, NY.

[23] H. M. Journee to G. D. Harris, March 13, 1911. HA-PRI, Ithaca, NY.

[24] H. M. Journee to G. D. Harris, April 6, 1911. HA-PRI, Ithaca, NY.

[25] H. M. Journee to G. D. Harris, April 14, 1911. HA-PRI, Ithaca, NY.

[26] H. M. Journee to G. D. Harris, April 29, 1911. HA-PRI, Ithaca,NY.

[27] H. M. Journee to G. D. Harris, July 10, 1911. HA-PRI, Ithaca, NY.

[28] Hand-written PS on letter from H. M. Journee to G. D. Harris, November 28, 1911. HA-PRI, Ithaca, NY.

[29] H. M. Journee to G. D. Harris, February 5, 1912. HA-PRI, Ithaca, NY.

be present at the christening. Can't you get down about that time?"[30]

Harris seems also to have had a head for business as well as for siting of the wells:

> "Your idea as to sell outstanding leases is quite in accord with our own, except for the fact that I believe there is a series of domes in this section. . . .
>
> "While we don't wish to become too ambitious on account of slight success. The demonstration of your theory has been so complete in this instance, that we are minded to take up the prospecting of Belle Isle should we meet with large success in the present instance, I am in position to obtain a lease on the entire island, and as you are so thoroughly familiar with the matter, I would be glad to have your views regarding the possibilities of oil to be found there. As I recollect it, you were very enthusiastic about the island when last I saw you."[31]

Of course there is nothing like a little prosperity to bring on civilization, and the well was producing oil at a good rate:

> "Since I wrote you last, things have been moving at Pine Prairie,—we have a lot of new neighbors, plenty of new saloons, a dance hall or two, and several holes being drilled, but as yet no wells. . . .
>
> "After bailing the water out, it came back oil, and is running better than 1,000 bbls. [a day?], which we are shipping directly, as we do not intend to close it again."[32]

In an earlier letter, Journee said that oil from the Caddo Field was selling for $.60/ barrel.[33] Then assuming the yield figure quoted is barrels/day, that one well would create a gross income of about $600.00 per day. To help put this figure in perspective, Harris' salary at Cornell University, if he had worked full-time, would have been about $3,000 per year, or $250/ month. Thus, the gross income from that one well in one day was equal to more than twice Harris' monthly salary.

Journee continued to express his support for Harris and the relationship between the presence of oil and the salt domes:

> "All indications bear our [*sic*] your views that the oil will lie immediately adjoining the salt, and the test will now be to locate the contour of the salt dome."[34]

While Journee and Harris were corresponding about the wells owned by The Myles Mineral Company, Harris was receiving letters from W. D. Cheny[35] in Shreveport, Louisiana, and consulting with him on a project at the same time. Cheny enclosed land maps and well logs on wells drilled by the Cudahy Oil Company:[36]

> "I am enclosing you a map and a log of the well drilled by the Cudahy Oil Co. on the lease I made them, and I have lately acquired the well and the surrender of the lease. . . .
>
> ". . . I am sending you under separate cover some samples of the rock, shells and sand, . . ."[37]

In 1913, there was yet another company joining Harris' "stable", The Pardee Company. This group was headquartered in Philadelphia, and this connection apparently developed as a result of his work with The Myles Mineral Company in the Pine Prairie area. Harris did some preliminary work for The Pardee Company in late 1912[38], and there must have been an exchange of information between the two organizations as Journee knew Harris had some connection with The Pardee Company:

> "Am in receipt of a letter from The Pardee Company, stating that they have abandoned the idea of drilling at Pine Prairie, but they make no explanation whatever. In view of the many courtesies which I have extended these people, and the personal trouble and inconvenience I have been put to in their behalf, the letter is not at all what I should have expected. Can you give me, confidentially, any information as to the sudden change of front of Mr. Pardee?"[39]

Harris must have known nothing about the Pine Prairie project, or chose not to say anything:

> "Yours of the 12th is received, and I note that the Pardee people have not taken you into their confidence as to the cause of their delay. I was very much surprised at their sudden change of attitude and the brusque manner in which they announced it to me. However it is evident they have some plans which they desire to conceal, and as my interest

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[30] H. M. Journee to G. D. Harris, February 10, 1912. HA-PRI, Ithaca, NY.

[31] H. M. Journee to G. D. Harris, February 21, 1912. HA-PRI, Ithaca, NY.

[32] H. M. Journee to G. D. Harris, April 12, 1912. HA-PRI, Ithaca, NY.

[33] H. M. Journee to G. D. Harris, March 23, 1912. HA-PRI, Ithaca, NY.

[34] H. M. Journee to G. D. Harris, April 29, 1912. HA-PRI, Ithaca, NY.

[35] No information is known about W. D. Cheny, but apparently he was no relation to Monroe G. Cheney (Cornell B.S. '16).

[36] W. D. Cheny to G. D. Harris, November 29, 1911, April 20, 1912, and one undated letter missing page 1, but the information in it appears to be about the same well as the April letter and written near the April, 1912 date. HA-PRI, Ithaca, NY.

[37] W. D. Cheny to G. D. Harris, April 29, 1912. HA-PRI, Ithaca, NY.

[38] Copy of a report prepared by Harris for The Pardee Company, August 12, 1912. HA-PRI, Ithaca, NY.

[39] H. M. Journee to Gilbert D. Harris, February 8, 1913. HA-PRI, Ithaca, NY.

> is largely friendly and my efforts entirely gratis, I shall not trouble them further."[40]

But apparently Pardee was still in communication with Journee:

> "Just received a telegram, requesting that I meet Mr. Pardee in New Orleans tomorrow, and will advise you as to the outcome. Verily the Yankee commercial mind, like Providence, 'moves in a mysterious way its wonders to perform' "[41]

Journee apparently was looking after Harris' interest as a consultant, as well as his own interests; note the use of the word "us":

> "Today I had a conversation with Mr. Wexler, Vice-President of the Largest [*sic*] bank here, and he states that he wants us to go to Honduras this Summer [*sic*], and he requested that I write and ask whether or not you can go. Your compensation would be $500.00 per month and expenses, and the trip would be a most interesting one. Please let me hear from you, and if you can arrange to go, I will make definite arrangements."[42]

But Honduras was too much even for Harris to undertake at that time:

> ". . . I note your plans for work during the coming year; and upon further consideration I quite agree with you that it would be well to devote whatever time you can spare this summer to Louisiana work, and defer the Honduras trip until next winter. I will immediately take this matter up with Mr. Wexler and ascertain whether or not this will meet with his views."[43]

Harris replied to Journee agreeing with the postponement, but he certainly wanted to keep the project alive, if possible:

> "I think it is quite proper to let the Honduras proposition rest over until next winter if it will keep. In fact I am writing this particularly to let you know that this so far as I am concerned will be possible for next winter, because I have already made arrangements with the Trustees to allow me the same leave of absence the coming winter as I had during the past, namely from about December 22nd to February 6th. This will give us ample opportunity for investigating any equatorial proposition."[44]

The monthly salary quoted by Journee apparently was Harris' standard rate and, no doubt, one of the reasons why Harris was drawn to this work.

There was no further explanation from Journee as to why Mr. Pardee wanted to meet with him, but Pardee may have wanted to ask him about Harris' work as a geologist, for by May, 1913, The Pardee Company was back in touch with Harris:

> "I am advised by my son Ario Pardee that you are willing to continue to serve my Company, or myself, or both, as heretofore, looking over the lands of The Pardee Company, to advise where to search for Gas, Oil, or Salt, and, in addition, to advise as to additional purchases of lands where in your opinion these minerals or elements may be found, and on the terms hitherto paid you,—Five Hundred Dollars per month and your expenses. In addition, we are to pay for the necessary surveyors, etc., to aid you, and also their expenses.
>
> "You are to spend two months on this work the coming summer and one month next winter.
>
> "In addition to your salary and expenses, we are to give you a five percent interest in the lands purchased in the territory where you think a new stratum oil field, similar to the Caddo field, may be found."[45]

As this offer came when his maximum annual salary at Cornell was only $250 per month, needless to say, Harris accepted almost immediately:

> "Herewith I am returning some clippings from the Shreveport Times sent to me by your Mr. Hodge. . . .
>
> "As regards your personal letter of May 2nd, the conditions you mention are entirely satisfactory to me, and I shall take great pleasure in working out the stratigraphy of the east portion of the Sabine uplift. I really believe herein is the secret of future development that is worthy of serious consideration"[46]

Pardee was quite happy that Harris had accepted the terms:

> "I need not say I am pleased that the conditions named in my letter to you of May 2nd are entirely satisfactory to you and that you will be prepared to go to Louisiana sometime in July."[47]

At this point it is necessary to note that now Harris was working for The Pardee Company (Philadelphia), Mr. C. Pardee, President, and for The Myles Mineral Company (New Orleans), Mr. H. M. Journee, Secretary, both at the same time. Also, the officials of each companies appear to have known of his affiliation with the other company, for Harris was open with Journee that he was now working for another company:

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[40] H. M. Journee to Gilbert D. Harris, February 25, 1913. HA-PRI, Ithaca, NY.

[41] H. M. Journee to Gilbert D. Harris, March 12, 1913. HA-PRI, Ithaca, NY.

[42] H. M. Journee to Gilbert D. Harris, March 17, 1913. HA-PRI, Ithaca, NY.

[43] H. M. Journee to Gilbert D. Harris, March 28, 1913. HA-PRI, Ithaca, NY.

[44] Unsigned carbon copy, Gilbert D. Harris to H. M. Journee, April 7, 1913. HA-PRI, Ithaca, NY.

[45] C. Pardee, President, Pardee Land Company, to G. D. Harris, May 2, 1913. HA-PRI, Ithaca, NY.

[46] Unsigned carbon copy, Gilbert D. Harris to C. Pardee, May 7, 1913. HA-PRI, Ithaca, NY.

[47] C. Pardee to Gilbert D. Harris, May 12, 1913. HA-PRI, Ithaca, NY.

> "I shall be down in Louisiana further to the north however, for the Pardee people next summer, and doubtless shall be through by Pine Prairie sometime before the University opens in the fall."[48]

Apparently Harris' reputation was spreading; the following is another example of many such letters from this time period requesting his services, this one from the "Bank of Boyce, Boyce, Louisiana":

> "We understand you have been doing some geoligist [*sic*] work for the Pine Prairie Oil Co, also for S, [*sic*] Gumble of New Orleans. We want some work of this kind in Rapides Parish, near Boyce. Are you in a position to do any thing [*sic*] of this kind at the presant [*sic*] time, and if so, what are your usual terms, and what machinery would be necessary for the initial work, if any."[49]

And another, this time with a letterhead, "Fox-Renaud Grocer Company, Limited; Pure Food Grocers" in Monroe, Louisiana, also requesting Harris' help:

> "Associates and self have in contemplation drilling for oil or gas in this parish. Could we secure your services or some other competent person to locate the place to drill, if in your opinion, indications are such as to justify sinking a well and what would you charge for the services." [*sic*][50]

This time Harris declined, but he did offer some free advice:

> "Replying to your favor of the 15th, I must say that from my experience in the state of Louisiana, I could not recommend the expenditure of money drilling for oil in northeast central Louisiana, or in the parishes immediately around Monroe. . . . Again, since I shall be occupied most busily all summer in oil investigation in other parts of the state where I have more confidence in the locations, I could not find time to spend with you as suggested in your letter."[51]

It was at this time that the Hodge character, mentioned in a previous letter, made a major entrance into Harris' consulting activities. This episode also demonstrates that the latter part of the Twentieth Century does not have a monopoly on unscrupulous behavior. Based on a letter from Pardee to Harris May 17, 1913, there was some trouble brewing. Pardee wrote:

> "Mr. Hathaway writes me under date of 5/22/13: 'There has been some parties from your territory that is [*sic*] trying to buy some land in the immediate sections where we have been trying to buy, and I am unable to ascertain how these people got this information, unless the same came from your office. However, I learned yesterday that Mr. Thos. [*sic*] L. Hodge had been in Shreveport and also in New Orleans while I was in Tennessee. This might account for the interference.'
>
> "I have written Mr. Hathaway to know exactly *where* efforts had thus been made to secure lands in the territory where you have already made, or propose making, examinations and reports in my interest.
>
> "I dismissed Mr. Hodge April 30, 1913, since which time he made a visit to Louisiana, reported by Mr. Hathaway.
>
> "I have thought it best to advise you of Mr. Hodge's dismissal and of his reported efforts to buy lands in Louisiana in what I might term my territory and in which you are to have an interest, as I fear he has been trying to get lands in what you think may prove a possible second Caddo field[52]." [Emphasis in the original.][53]

A few months prior to this, in March, Hodge had returned a page from Harris' report which described those lands.

Harris shared his thoughts on the situation with Journee:

> "I am informed from Mr. Pardee of Philadelphia that Mr. Hodge is no longer with the Pardee Company and the intimation is given me that Mr. Hodge has been in Louisiana apparently taking advantage of the geological knowledge gained through association with me while in the Pardee employ. All of this I hope is in some way due to some slight misunderstanding, for I do not wish to consider Mr. Hodge a traitor, but I thought it my duty to give you this pointer, which you may be on your guard as to what statements Mr. Hodge may make to you if he is that character of a person seemingly indicated by what little I have received from the Pardee people of late. The only suspicion I have felt regarding Mr. Hodge was (1) as I have already written you, I see no necessity whatever of his taking time and expense to go to Louisiana to help write my report for I had promised to stop in Philadelphia and tell the Pardee people all I knew; (2) I became slightly suspicious on account of the over religiousness shown ostentatiously, or without cause in many instances by Mr. Hodge. I always

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[48] Unsigned carbon copy, Gilbert D. Harris to H. M. Journee, May 8, 1913. HA-PRI, Ithaca, NY.

[49] William Jonlaw to G. D. Harris, January 4, 1913. HA-PRI, Ithaca, NY.

[50] Charles Schultz to Gilbert D. Harris, May 10, 1913. HA-PRI, Ithaca, NY.

[51] Unsigned carbon copy, Gilbert D. Harris to Charles Schulz, May 19, 1913. HA-PRI, Ithaca, NY.

[52] The Caddo oil field was first developed about 1904 (Harris *et al.*, 1909). Production peaked in 1913, and by January 1, 1920, the Caddo Field had produced over 81 million barrels of oil. On March 10, 1920 it was still producing over 17,000 barrels per day (Powers, 1920b).

[53] C. Pardee to Gilbert D. Harris, May 27, 1913. HA-PRI, Ithaca, NY.

> feel very suspicious of a person who takes particular pains to state that he is very, very religious, and especially if he has serious fears of my immortal soul. After what has happened and the very crooked morality displayed, if such it really turns out to be, I feel almost inclined to write to Mr. Hodge and ask how about his own immortal soul."[54]

Apparently, Hathaway (in New Orleans), Harris (in Ithaca), and Pardee (in Philadelphia) did not move quickly enough, for only a few days later, Harris wrote to Pardee:

> "I think Mr. Hodge has made a serious mistake in any way you may consider it, for first, it seems to me [Harris] that upon his [Hodge] representation of what seems to be a good thing to any company in Shreveport, the question will immediately be raised as to what authority he bases his judgement upon, and if he declines to tell they will immediately suspect something is wrong, and in case he should tell said companies will more than apt to write to me some inquiries regarding the matter, and I cannot help thinking aside from the moral aspect of the matter, he has made a most grievous mistake. What could have lead [*sic*] him to such miserable actions, I for one cannot imagine."[55]

Harris then received the following:

> "Your letter of 2nd inst. has been received and I will write Mr. Hathaway to-day [*sic*] to better describe the 4040 acres referred to in his letter May 28th and the 1000 acres referred to in his letter to me of 5/22/13, copies of which I enclose you [*sic*].
>
> "Mr. Hathaway wired me yesterday from New Orleans that the scamp Hodge and friends had closed for the 4000 acres (which I believe to be the 4040 acres)."[56]

To further complicate this situation, there seems to have been some financial connection between the two companies, at least on some of the drilling prospects. Here is part of a letter from Journee, Secretary of The Myles Mineral Company:

> "The Pardee well is now down more than 2500 feet, and when I left yesterday, was in water sand with many shells, so it looks like a dead one to me, and I told Hincy he could have our interest if he wanted to go deeper."[57]

About two months before Hodge was dismissed by Pardee, Harris had received a short letter from none other than Thomas L. Hodge who was returning a page from one of Harris' reports. From the closing in the letter, it would appear that Hodge and Harris had more than a passing acquaintance:

> "Enclosed is sheet [page] no. 19 of your Report which must belong to your copy, as our copy and that sent to Hathaway are complete . . .
>
> Mrs. Hodge wanted to be remembered when I wrote again."[58]

Another interesting note is that the page Hodge was returning just happened to be one that has part of the description of "A New Stratum Oil Field" and mentioned:

> "Such facts as we now have tend to cause us to believe that in the extreme south of Bossier and southwest extreme of Webster Parish a monoclinal structure exists that, in case oil has been generated in this district of Louisiana, should produce a duplicate of the Caddo field. . . . Again, we have determined that on Lake Bistineau nearly along the Webster-Bienville line it is not the Claiborne Eocene that appears at the surface but the Sabine, just as in the Caddo field! [Emphasis in the original.][59]

It was in June that Harris must have written to Journee about Hodge, for he received this reply:

> "Yes; we have Mr. Hodge in our midst, so to speak. He has been down here twice within the last thirty days, and is at present in Shreveport. He came to me about two weeks ago and stated that he wanted to buy some cheap lands in the Lake Bistineau section, and I turned him over to Mr. Giddens of Campti, with the understanding that he (Giddens) and I divide any profit that might be made; and I understand from him that he has sold Hodge the 4,000 acres immediately adjoining the lake on the west, in Township 16, Range 10. I don't know just what Mr. Hodge has in view, but my impression is that some of his friends have put up this money and are carrying him for an interest in the purchase. If Hodge is stealing Pardee thunder, and Hathaway says that he is, I don't know just exactly how he satisfies his conscience; but he tells me that he attended Sunday school in Shreveport, and urges that I do so on the occasion of my next visit there. He also expressed much concern for my spiritual and moral welfare, and I know he thinks that poor Babcock is utterly damned."[60]

The saga continued, with Harris very much involved. From Pardee, Harris received a letter dated June 12th and with it was a copy of a letter to Pardee from Hodge. First is Hodge's letter to Pardee and then Pardee's accompanying letter to Harris:

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[54] Unsigned carbon copy, Gilbert D. Harris to H. M. Journee, May 30, 1913. HA-PRI, Ithaca, NY.

[55] Unsigned carbon copy, Gilbert D. Harris to C. Pardee, June 2, 1913. HA-PRI, Ithaca, NY.

[56] C. Pardee to Gilbert D. Harris, June 5, 1913. HA-PRI, Ithaca, NY.

[57] H. M. Journee to Gilbert D. Harris, January 27, 1914. HA-PRI, Ithaca, NY.

[58] Thomas L. Hodge to Gilbert D. Harris, March 3, 1913. HA-PRI, Ithaca, NY.

[59] Part of an unpublished report, page 19, attached to a letter from Thomas L. Hodge to Gilbert D. Harris, March 3, 1913. HA-PRI, Ithaca, NY.

[60] H. M. Journee to Gilbert D. Harris, June 5, 1913. HA-PRI, Ithaca, NY.

> "At Pine Prairie yesterday I [Hodge] learned from Mr. Journee, for the first time, that you had been offered a portion of the 4000 acres at Lake Bistineau recently purchased for my friends. I think you should know the circumstances under which I acted.
>
> "When you [Pardee] dismissed me from your employ, it was, of course, necessary for me to secure other employment, and I came to New Orleans to see Mr. Journee about another matter. He told me of a report which Dr. Harris made to his friends last year of a possible new oil field, and said that if I could raise any money he thought he could get me some cheap land in that neighborhood, naming a price at which he agreed to buy it. I accepted the proposition with the understanding that nothing should be done to embarrass Mr. Hathaway in any negotiations he might have in hand. I returned to Philadelphia, completed my arrangements for the purchase of a thousand acres, and on receipt of telegram from Mr. Journee, went to Shreveport, where he told me that there were 4000 acres in the tract, which my people agreed to take. It was not until the week after I had agreed to take the property for my friends and arranged for the money, that I learned of Mr. Hathaway being after it. I was then committed to my friends. . . .
>
> "I felt entirely free to secure the land in that territory after Mr. Journee had volunteered the information regarding Mr. Harris' report of last year, showing that the information was not the exclusive property of the Pardee Company; also from the fact that you said in the office some time ago that you could not, of course, buy all the land in that neighborhood, and further, that you said to Mr. Ario [Pardee, son of C. Pardee], in my hearing, that you had already secured 3000 acres on the lake. . . .
>
> "If I have interfered with your plans, it was unintentionally done, and I very much regret it, having supposed, as stated above, that you had already secured a large holding in that neighborhood"[61]

Pardee's assessment of Hodge's explanation, as he explained to Harris, was not very high:

> "I am to meet him [Hathaway], and will ascertain what he knows of Mr. Journee's reports to Mr. Hodge as to Hodge's explanation in second paragraph of his letter, of your report of last year to Mr. Journee's friends of a possible new oil field based on which Hodge claims he bought the four thousand acres.
>
> "I can only say Hodge was fully aware of your report made this year in my interest and even marked on one of our office maps of Louisiana the exact location of the territory where you thought might be found a second Caddo Oil Field and I naturally assumed he was using confidential information gained while in my employ to my detriment. Hodge's explanation is one that does not explain in my opinion. In view of your statements that the information you gave of this supposed oil field was to be confidential he should not have gone into this territory except with your consent and mine."[62]

But now the plot thickened. Again from Pardee:

> "I returned from Bristol, Va., yesterday after an interview with Mr. Hathaway, who says your Report, which Hodge mentions in his letter of explanation, was the one you made Julius Weis & Sons and its contents were made known by Mr. Journee to both Mr. Hathaway and to Mr. Hodge in Mr. Journee's office.
>
> "Mr. Hathaway also states that Hodge had a copy made of your report to The Pardee Company which he [Hodge] virtually stole from me and gave it to a Mr. Giddens of Shreveport while buying through him the 4040 acres on the west side of Lake Bisteneau [*sic*].
>
> "I also learned through Mr. Hathaway that The Gulf Refining Company have recently renewed their oil leases in the Lake Bisteneau [*sic*] section and that very little land remains without leases."[63]

Pardee enclosed for Harris a copy of his letter to Hodge, and from the last section it seems Harris shared his letter from Journee with Pardee, or Pardee had communicated with Journee himself. Pardee wrote to Hodge:

> "Your [Hodge] letter of June 9, 1913, has been received, but your explanation does not explain, as you deliberately appropriated while in my employ and took from my office a confidential report made by Dr. Harris for and at the expense of The Pardee Company, of which I am practically the owner, used it for your advantage, and furnished a copy to a Mr. Giddens[64] (and who I believe still has it) through whom you bought about four thousand acres of land in the territory recommended by Dr. Harris.
>
> "As you are noted for your ostentatious concern for the welfare of the souls of others, let me suggest that the welfare of your own soul needs especial looking after in view of this breach of trust by you."[65]

So now it appears that Harris was involved with yet another company, Julius Weis & Son, at the same time as the other two major companies. But none of this seemed to change Harris' relationship with either major company as shown with the following letters; first from Pardee, in what appears to be the finalé to the Hodge story, and then from Journee:

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[61] Typed copy of a letter, Thomas L. Hodge to C. Pardee, June 9, 1913. HA-PRI, Ithaca, NY.

[62] C. Pardee to Gilbert D. Harris, June 12, 1913. HA-PRI, Ithaca, NY.

[63] C. Pardee to Gilbert D. Harris, June 18, 1913. HA-PRI, Ithaca, NY.

[64] T. K. Giddens of Campti, Louisiana. From the surviving letters it appears that Harris was advising him on geological matters as well as advising him on where to send his son to study geology, Cornell or Louisiana State University; Unsigned carbon copies, Gilbert D. Harris to T. K. Giddens, October 2, 1913; November 17, 1913. HA-PRI, Ithaca, NY.

[65] Typed copy of a letter from C. Pardee to Thomas Hodge, June 18, 1913. HA-PRI, Ithaca, NY.

> "I [Pardee] still think it advisable that you [Harris] should go to Louisiana, as we have plenty of work for you there for the summer, and I shall expect you to do so and wish you would report to Mr. Hathaway, to whom I shall send a copy of this letter.
>
> "Hodge has replied to my letter of the 18th instant [*sic*], copy of which I sent you, as follows:—'I [Hodge] acknowledge that I did wrong in giving to another information from your office, and I ask your pardon for so doing.' I don't think Hodge shall ever get my pardon, and my only regret in the matter is that he cannot be punished as he deserves for his breach of trust."[66]

Then from Journee

> "Should Pardee decide to curtail his investigation this Summer [*sic*] I [Journee] can readily arrange for you to put in your time to advantage, as our mutual friend, Mr. Learned, of Natchez, is very anxious for you to make a comprehensive investigation of the section to which we paid a visit last Summer [*sic*]; and in any event I expect to arrange with Mr. Pardee for you to put in at least a couple of weeks at Natchez."[67]

Harris' response to Pardee must have been a positive one, for Pardee replied:

> "Your telegram has been received and I enclose you a check for Three Hundred dollars, and I infer you will be likely be prepared to start for Louisiana soon after July twentieth, . . . [to do] the examinations I would like you to make, which will, of course, include the Lake Bisteneau [*sic*] territory, even though Hodge so shamefully and outrageously took away about four thousand acres of it. . . ."[68]

But the Hodge affair would not go away, and it had made Harris very cautious, for almost four months later, he wrote to Pardee:

> "I am enclosing herewith a letter recently received from New Orleans, the import of which you will quickly grasp. . . .
>
> "Were you here, I would be glad to discuss this letter more in detail, but knowing how matters discussed before Hodge regarding my own opinion touching matters in Louisiana, and finding the same disclosed and commented upon freely by people in New Orleans, I think it best to say little at the present time, although I do not believe you will suffer again in the immediate future from men like Hodge."[69]

Then another reference to Mr. Hodge was made in one of Journee's letters, and it appears that Journee used the word "friend" in a sarcastic manner:

> "About a week ago your friend Mr. Hodge called on me here and stated that you would be astonished if you knew how closely he had followed your work during the past Summer [*sic*]. He also showed me a number of fossil shells in rock, taken from some point where you had made an examination, but he declined to state where. He asked me to ascertain what the shells were, but I told him I was not interested.
>
> "Whether intentionally or not, there is no doubt that Hodge has circulated so many reports throughout the entire section as to make it very difficult for Pardee to obtain cheap lands; and if you have found anything which you think it advisable to buy, I would suggest by all means that the negotiations be left to a third party, and that party be unknown in the transaction until such time as the purchases be completed. There is no doubt in my mind whatever that the Castor property could have been bought much cheaper in this manner. The nature of country people is such that I make practically all of my purchases through local men, even when buying only for land and timber values, and in sections generally recognized to be barren of minerals."[70]

The relationships with The Myles Mineral Company and The Pardee Company appear to be typical of the manner in which Harris went about his consulting, albeit all the more colorful due to the "scamp" Mr. Hodge; namely by mail and telegram, with the occasional site visit. As Harris maintained a connection with some companies for ten years, the results gained from following his advice must have been successful. A few of Harris' letters with instructions and advice have survived and these provide a brief look at the consulting services the companies were getting for their money. This one was written to Journee:

> "It certainly is little unlooked-for [*sic*] to have the flanking clays extend to the depth of 1200 feet; yet of course we must expect that there will be projections and inflections making the dome quite irregular about the periphery.
>
> "This seem to be the first well you have sunk in one of the inflections or bays in the dome and it naturally suggests for the well either no oil at all or a far greater and more satisfactory supply at a greater depth.

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[66] C. Pardee to Gilbert D. Harris, June 26, 1913. HA-PRI, Ithaca, NY.

[67] H. M. Journee to Gilbert D. Harris, June 27, 1913. HA-PRI, Ithaca, NY.

[68] C. Pardee to Gilbert D. Harris, June 30, 1913. HA-PRI, Ithaca, NY.

[69] Unsigned carbon copy, Gilbert D. Harris to C. Pardee, October 6, 1913. HA-PRI, Ithaca, NY.

[70] H. M. Journee to Gilbert D. Harris, October 1, 1913. HA-PRI, Ithaca, NY.

> "Hoping the latter condition will prove to be the correct one, . . ."[71]

The second one, to Pardee, is more detailed, and with definite conclusions, but they are presented in an almost "stream-of-consciousness" writing style that is difficult to follow:

> "I have also indicated on the map that in the central portion of the domw [*sic*] you may expect to find a large mass of salt. This will doubtless be flanked by porous limestone and gypsum. Similar to that we were in in Well No. 1. At Winfield just outside will be upturned sedimentary deposits and in the porous layers of such deposits in this particular case cretaceous [*sic*] formations such oil and gas accumulations as may have been formed in this region will naturally be found. A well located not too far a way [*sic*] from the salt center would naturally penetrate these cretaceous [*sic*] beds in an undisturbed condition, hence they would doubtless contain no special concentration of hydro carbons [*sic*]. Hence the location of Well No. 2 at Castor as you find it on your map still farther away from the sands of the dome outside of your main purchases you would doubtless find between one and two thousand ft. of tertiary [*sic*] sands containing a considerable amount of water to at least a thousand feet or more in depth. This then is the general scheme of this dome and a well or two of no great depth about the northern portion should indicate its oil potential."[72]

The advice given by a consultant can be only as good as the information received and at times Harris did suffer from insufficient information:

> "I have received your communication regarding the log of the well you were engaged in sinking, but I must confess that one can get only the most meager conception of what is really being done by a mere statement as a driller sees it in the field. What we want is actual specimens, particularly of the life that is generally in the form of sea shells that are brought up, that we may see whether or not low-lying formations have been bent up near the surface there and hence give us reason to suppose that such structures exist as may lead to the accumulation of Hydro Carbons [*sic*]."[73]

The Myles Mineral Company appeared to have dropped out of Harris' consulting stable by about 1915; at least that is when the surviving letters cease, about two years before the death of F. F. Myles. Letters and drilling reports from the Pardee company continued at least until 1923[74].

With the amount of consulting available to him and with companies willing to pay him four times his monthly, half-time salary from Cornell, it is easy to understand why Harris was very anxious to have this half-time arrangement continued, and even made permanent. He wrote to J. G. Schurman, Cornell University President:

> "A year or two ago you were kind enough to make an arrangement with me in my work whereby I substituted certain weels [*sic*] in the field in the summer for a few weeks between Christmas recess and the beginning of the second semester. . . . Now I am extremely anxious that this scheme, which has certainly worked with the greatest benefit and success to the students and University in general, should be continued and I am asking you therefore if you will kindly refer to the minutes of the action above referred to and see whether such action were [*sic*] taken to mean as a permanent arrangement or for last year only, . . ."[75]

It is interesting to note that Harris was apparently under contract to several companies at the same time, and was, no doubt, charging each of them his full monthly rate, but none of this was mentioned in his letter to the Cornell President. Also, the consulting work seemed to be taking Harris away from other academic projects, for he wrote to a Professor Lyford at Middlebury College:

> "As regards a text book on Paleontology for second year students, I can sympathize with you, because I have felt the need of exactly what you call for. In fact, I have already started such a text book to be published by Ginn & Company, but owing to lack of time the publication will be delayed for some years yet."[76]

By early 1915, apparently H. M. Journee was no longer employed by The Myles Mineral Company, for he was writing to Harris on a variety of company stationary, *e.g.* "Lake End Store", "Polk-Fenner Company Real Estate", and "The Lampton Realty Company"; still sending Harris drilling information and requesting assistance and professional advice. By 1920, Journee was with "Invincible Oil Company", Fort Worth, Texas. From the letters, it is difficult to determine just who was paying Harris for his information, the company or Journee himself, who then passed the material on to the company.

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[71] Gilbert D. Harris to H. M. Journee, February 17, 1914. HA-PRI, Ithaca, NY

[72] Gilbert D. Harris to C. Pardee, October 12, 1914. HA-PRI, Ithaca, NY.

[73] Unsigned carbon copy; Gilbert D. Harris to C. Pardee, December 15, 1913. HA-PRI, Ithaca, NY.

[74] Well log from "Henderson Syndicate's Pardee No. 1", December 1, 1922 to March 2, 1923. HA-PRI, Ithaca, NY.

[75] Gilbert D. Harris to J. G. Schurman, October 16, 1914. HA-PRI, Ithaca, NY.

[76] Carbon copy of a letter (unsigned), Gilbert D. Harris to C. A. Lyford, March 17, 1913. HA-PRI, Ithaca, NY. No record of such a manuscript has been found in the Harris Archives.

Over the next four or five years Harris continued to work for a variety of companies and individuals examining material from Brazil to the West Indies to Louisiana and Texas. A partial list includes: "Freeport Sulphur Company", Freeport, Texas; "Crystal Ice and Bottling Company, Ltd.", Natchitoches, Louisiana; "Mer Rouge Oil and Gas Company", Morehouse Parish, Louisiana; "Ouachita Natural Gas & Oil Company", Ouachita, Louisiana; "Progressive Oil & Gas Company", Morehouse Parish, Louisiana; "Chestine Land Corporation"; "Louisiana Oil Refining Corporation", Shreveport; "Sinclair Exploration Company", "The Texas Company"; "Trinidad Petroleum Development Company"; and "Standard Oil Company."

Harris had used students as assistants when he was directing the Louisiana State Survey and, at least by 1914, his students were involved in the consulting business as well, following in the footsteps of their professor:

> "Work here is just over for me this term. I am out every week end [*sic*], acting as consulting and field geologist for one of the big oil companies of the state."[77]

And another student, who was to later accompany Harris on one of the *Ecphora* trips, Karl Schmidt, wrote:

> "As there has been no pause in the drilling here I have not gone to Winnfield this week, and hence not talked with Hincy. I may as well send in what meager information I have from Mr. Hines, and report later on conversation with Mr. Hincy."[78]

From Schmidt's letters, it appears that he was working for Harris as a field representative in Louisiana while he was doing other collecting work. In the letters, Schmidt made several references to collecting snakes, insects, etc.

Although there is no record that Harris ever made the Honduras trip mentioned previously, even before 1920, his students were being employed in foreign ventures[79] and companies were contacting Harris about potential employment and requesting recommendations:

> "I have been authorized by Mr. D. F. McDonald, Geologist for the Sinclair Central America Oil Corporation, to employ a number of geologists for work in the Republic of Panama. The men are wanted for a period of six months beginning the latter part of December and of course all expenses including traveling will be included. I would be glad to hear of any men who you care to recommend. You, no doubt, can understand that men with German names have considerable difficulty in traveling nowadays but this need not be a serious drawback if they are American born."[80]

Those who went to foreign lands always seemed to keep in touch with Harris, for there are many rather lengthy letters from former students. Axel Olsson was a frequent correspondent; from Panama he wrote:

> "A few weeks ago I returned from a ten week trip to the Pearl Islands and to the interior of Panama. Before that I had been pretty much on the move with only a few days in town at a time.
>
> ". . . The fossil collections have been shipped to the Smithsonian but as soon as the war is over I hope to get busy on them. . . . and of greatest interest a large nautiloid, probably the *Enelimatoceras alrichi* Vaughan on the bases of the very small and incomplete fossil collection made by MacDonald has correlated this Eocene with the Wilcox, but don't you think it is more apt to be your Midway?
>
> "I have spent quite a bit of time in the Darien that part of Panama which borders Columbia [*sic*]. Geographically it is the most interesting part of the republic [*sic*], contains the largest river, is inhabited by black Panamains [*sic*] and by friendly and hostile Indian tribes. With our launch *Bertha*, we ascended the Rio Tuyre to Real and Yarisa. Both are old towns which were founded by the Spaniards some 400 years ago . . . For this river work, use is made of a long, slender, dug-out canoe with flattened bow and stern. . . . One man stands at the bow and another at the stern and by poling progress is made against the current and up over rapids. These boatman are wonders at the work . . . In this way one can go far up the small shallow rivers and over bad looking rapids. Coming down is at first quite exciting but the novelty gradually wears off. A river may take 3 or 4 days to ascend may take only half a day or less to descend, especially as often happens during a flood. . . . In the Tuyre valley the Cunas are friendly but in the upper [illegible] are hostile against strangers of any kind. Their country is closed and very little is known regarding it. . . .
>
> "In the Tuyre valley we have a geologic section some 10,000 feet thick of which 3000 feet are highly fossiliferous. . . . This will make an interesting subject of study by itself.
>
> "Yesterday I helped take our launch *Bertha* through the Panama Canal. It seemed like our old days on the Barge Canal and the good old Delaware and Chesapeake. Some day we must have another *Ecphora* trip."[81]

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[77] Irving Perrine (A.B.'07, M.A'11, Ph.D.'12) to Gilbert D. Harris, January 29, 1914. At this time Perrine was on the faculty of The University of Oklahoma. HA-PRI, Ithaca, NY.

[78] Karl P. Schmidt to Gilbert D. Harris, February 13, 1915. HA-PRI, Ithaca, NY. This letter from Schmidt in Louisiana was written on Cornell University, Department of Entomology letterhead.

[79] A. C. Veatch was writing from England in 1914. A. C. Veatch to Gilbert D. Harris, November 7, 1914. HA-PRI, Ithaca, NY.

[80] D. Dale Condit to Gilbert D. Harris, November 10, 1917. HA-PRI, Ithaca, NY.

[81] Axel Olsson to Gilbert D. Harris, October 6, 1918. HA-PRI, Ithaca, NY.

Through the influence of A. C. Veatch, his former student and assistant during the Louisiana Survey days who was then with Sinclair Oil Company, Harris was hired by the Trinidad Petroleum Development Company, Ltd. in 1919. In a memorandum Veatch described Harris this way:

> "2. In a region where the geology is of the character of that in Trinidad, it is quite important to have Paleontological assistance. I [Veatch] wrote [R. H.] Soper to send the fossils to Professor G. D. Harris of Cornell University, the greatest authority in the world on American Tertiary fossils, saying that I was writing Professor Harris asking what arrangements could be made with him, or through him, for examining the fossils which Soper would send him from time to time, and for reporting to Soper on their stratigraphical significance.
>
> "3. At the same time I wrote Professor Harris asking if he could accept the position of Consulting Paleontologist to the Company and asking also if an honorarium of $1,000 per annum[82] would meet the case,—the Company to pay, in addition, all freight and transportation expenses.
>
> "4. I now have a letter from Professor Harris accepting this basis."[83]

In the contract Harris received from the Trinidad Petroleum Development Company, in addition to indicating the salary would be $1,000 per year, were two interesting clauses; very interesting, indeed, in light of difficulties that developed about seven years later with Maury. The clauses were:

> "3. The specimens sent you will be your personal property, except for such sets of representative examples of characteristic forms as may be of value for a reference collection for the field geologists working for the Company in this area.
>
> "4. The Company has no objection to your publishing descriptions of new fossils found, but you will not be free to make publication concerning general stratigraphical results at any time within five years from the date of the receipt of the collections without approval of the geologist in charge of the Trinidad work, which approval will be on the basis that such publication will not prejudicially affect the commercial interests of the Company."[84]

This last clause is quite interesting, also, in light of the philosophy Harris apparently imparted to his students:

> "Now if there is anything that I can do for you in the way of visiting localities, collecting fossils, taking photographs, or any other information either regarding Trinidad or the mainland of Venezuela across the Gulf, remember you have but to ask. There are, as I have often heard you say, scientific things which are above ones [*sic*] duty to any company and if while I am there I can get you any information which may help you in your work or possibly save you a trip down I will only be too glad to do so. I have not forgotten the innumerable things you did for me when I was at the university."[85]

Within six months of Harris taking the position with the Trinidad Petroleum Development Company, Soper left the Company and Gerald. A. Waring[86] became Harris' contact in Trinidad, and the two men were to continue their working and personal relationship for many years. Harris did not, however, make a very auspicious start with the Company:

> "We received a short letter from you dated September, 1st. [1919] in which you said that you were working on our material, but we have heard nothing from you since then. I also wrote you on 22nd. September, and sent a few fossils by mail, from two wells, but have not received an acknowledgment to date. We are particularly anxious to hear from you in regard these latter fossils—whether or not they are of any value. You understand, of course, that if the material we send you, is to be of actual value in this particular survey, the data [*sic*] will have to be available by the end of August, 1920 at the latest, since the final report and maps will probably be prepared during September and October, 1920."[87]

So in 1920, Harris went to Trinidad, his first trip overseas since his visits to England and France in 1894, just after he had accepted the position at Cornell (Palmer, 1953c). But this time he was going for consulting purposes and was being paid. In a letter to Waring in May, 1920, Harris mentioned his plans:

> ". . . am planning so that if the Pearsons will help me on my field expenses I can take next year off for field work at least for the early months of 1921."[88]

Later, Waring confirms his 1920 trip:

> "Since you sailed for New York, Mr. Kip has put in a

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[82] This pay rate was still in effect in 1923, for Harris received a check for $500 which covered the, ". . .half yearly payment. . ." N. F. Hill to Gilbert D. Harris, January 3, 1923. HA-PRI, Ithaca, NY.

[83] *MEMORANDUM to The Board of the Trinidad Petroleum Development Co. Ltd. Regarding a Paleontologist for the Trinidad Work.* Initialed "ACV" in Veatch's handwriting, July 14, 1919. Trinidad Box, HA-PRI, Ithaca, NY.

[84] Contact between Trinidad Petroleum Development Company Ltd. and Gilbert D. Harris, July 17, 1919. Trinidad Box, HA-PRI, Ithaca, NY.

[85] R. A. Liddle to Gilbert D. Harris, January 2, 1921. HA-PRI, Ithaca, NY.

[86] G. A. Waring came to the Trinidad Petroleum Development Company, Ltd. after working for the U.S.G.S, and later he worked for Margay Oil Corporation (Tulsa, Oklahoma). Harris named *Venezuela waringi* in his honor.

[87] R. H. Soper to Gilbert D. Harris, December 18, 1919. Trinidad Box, HA-PRI, Ithaca, NY.

[88] Carbon copy, Gilbert D. Harris to G. A. Waring, May 2, 1920. Trinidad Box, HA-PRI, Ithaca, NY.

> couple of days on the lower part of the Brasso section; . . .”[89]

Although not mentioned by Palmer (1953c), a letter from Waring in 1921 suggests that Harris made a return trip to Trinidad the following year, from which he was late returning to Ithaca and missed the beginning of the fall term:

> “I was pleased to receive your letter of the 20th. October and to learn that you had reached home safely with all of your material. . . .
>
> “We are interested to learn of Cornell’s new President[90], and I presume it was in connection with his installation that some dissatisfaction was felt with your late return to the University. I fancy, however, that the incident has been wellnigh [*sic*] forgotten by this time, and doubtless the inconvenience to you was not such as to detract from the advantage of spending a few days longer here in in [*sic*] Trinidad.”[91]

During the 1921 excursion, Harris collected material from over 100 localities[92], and he returned to Trinidad again in 1923[93] (Harris and Hodson 1922, 1931; Harris 1926; Waring 1926):

As a measure of the respect he enjoyed among the professionals working on Trinidad, it appears there is a mountain there named after him[94]. Also, during the 1921 trip, Harris managed to arrange a meeting to discuss stratigraphic nomenclature of Trinidad, attended by geologists from all the oil companies working there; Trinidad Petroleum Development Company, Ldt., United British W. I. Petroleum Syndicate, Ltd., Trinidad Leaseholds, Ltd., Trinidad Central Oilfields, Ltd., and Apex Oilfields, Ltd.:

> “This meeting was called partly at the instance of Prof. G. D. Harris of Cornell University, who wished to discuss the matter with geologists of the principal Oil [*sic*] companies, before he returned to the States. This meeting was also in part in response to a desire expressed by Drs. Ganz and Kugler[95] [respectively representing the United British W.I. Petroleum Syndicate, Ltd. and Apex Oilfields, Ltd], to exchange ideas with Professor Harris about a uniform system of nomenclature to be adopted by the leading geologists working in Trinidad. . . .
>
> “As a result of the meeting the following formation names were tentatively agreed upon, but without discussion of their geologic age, or even of their equivalence or sequences—

	Matura Formation
Moruga Formation	Caroni Formation
	Manzanilla Formation
Naparima Formation	Tamana Formation
San Fernando Formation (Palo Seco Facies)	Pointe-a-Pierre Formation
San Fernando Formation	
San Fernando Argiline Formation”[96]	

There seems to be a connection between Harris’ work in Trinidad and his re-publication of the paleontological writings of Guppy (Harris, 1921), as both occurred at about the same time.

His 1923 visit to Trinidad was made while returning from a consulting trip to Venezuela.

> “After spending two months in Venezuela a stopped [*sic*] by in Trinidad for two weeks and Waring and I had a final look over the Island.”[97]

By the early 1920s a former student, Ralph Liddle[98], was working in Venezuela for Standard Oil Company, and he seemed to be Harris’ contact for the Venezuela portion of the 1923 trip:

> “I am glad to hear that you are well and that you intend going to Venezuela on an excursion with Mr. Lidall [*sic*] [R. A. Liddle]”[99]

Later Liddle forwarded some photographs to Harris showing him sitting on a "gallant steed on the La Velg anticline" taken during the Venezuela trip.[100]

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[89] G. A. Waring to Gilbert D. Harris, October 8, 1920. HA-PRI, Ithaca, NY.

[90] On June 30, 1921, it was announced that Livingston Farrand, former President of the University of Colorado and Chairman of the American Red Cross, would become President of Cornell University (Bishop, 1962).

[91] G. A. Waring to Gilbert D. Harris, November 10, 1921. Waring File, Trinidad Box, HA-PRI, Ithaca, NY.

[92] Locality list of all 109 sites is in the Trinidad Box, HA-PRI, Ithaca, NY.

[93] G. D. Harris field book with title “Trinidad” which starts on August 7, 1923 and the last entry is August 16. Trinidad Box, HA-PRI, Ithaca, NY. Attached to a letter from Waring is a list of collecting localities for Harris which has the dates “August-September, 1923” on it. G. A. Waring to Gilbert D. Harris, September 24, 1923. HA-PRI, Ithaca, NY.

[94] “River between Mt. Harris and Plum Mitan Rd.” Quotation in a letter from H. G. Kugler to Gilbert D. Harris, November 13, 1924. Kugler File, Trinidad Box, HA-PRI, Ithaca, NY.

[95] Harris continued correspondence with Kugler for 30 years. H. G. Kugler to G. D. Harris: first letter, June 12, 1923; last letter, July 3, 1951. Kugler File, Trinidad Box, HA-PRI, Ithaca, NY.

[96] *Notes of a meeting held at the residence of G. A. Waring, in Port of Spain, on the 22nd, September, 1921, to discuss the adoption of an Uniform Series of names for the various Geologic formations of Trinidad*, p. 1 and 5. Trinidad Box, HA-PRI, Ithaca, NY. These names were used a year later in a stratigraphic column sent along with a letter to Harris by G. A. Waring, October 24, 1922. HA-PRI, Ithaca, NY.

[97] Gilbert D. Harris to H. G. Kugler, December 25, 1923. Kugler File, Trinidad Box, HA-PRI, Ithaca, NY.

[98] Ralph Alexander Liddle (Cornell A.B.’18).

[99] H. G. Kugler to G. D. Harris, December 6, 1923, p. 4. Kugler File, Trinidad Box, HA-PRI, Ithaca, NY.

Palmer (1953c) stated that the Venezuela trip was in 1924, but, although he made a second trip in 1924, Harris' letter quoted above clearly states that he was in Venezuela in 1923 working for the Standard Oil Company[101]. And a letter from that company, dated September 5, 1922, suggests that he was hired in late 1922, at the same time as Floyd Hodson, another of his students:

> "We desire this work to be under your general supervision so that Mr. Hodson and the Venezuelan organization can call on you at any time for advice. We shall in all probability count on your making a trip down there next summer [1923] to see that the work is being properly handled and to give personal attention to it.'
>
> "As to the matter of compensation, I am authorized to make you an offer at the rate of $700 per month for time actually devoted to the work, whether in the field or in the laboratory, with all official traveling and field expenses while in the field."[102]

The material he collected on these consulting excursions plus the material collected by his students and returned to his laboratory, created a very valuable resource. Harris described the situation this way:

> "I now have enough material from Santo Domingo, Jamaica, Costa Rica, Panama, Peru and Venezuela so that I can begin to work to advantage, in fact have the best outfit going on west Hemisphere Paleontology [*sic*] of the later formations, and more coming from Venezuela, Peru, Columbia [*sic*] and Argentina."[103]

As more data became available, modifications had to be made in previous stratigraphic positioning of some of the strata. A former student of Harris', Carlotta Maury, had proposed some of the earlier nomenclature and organization (Maury 1917a,b, 1918, 1925):

> "... thanks especially for the copy of Miss Maury's bulletin on the Miocene and Pliocene of Trinidad[104]. Will you kindly extend to her my sincere appreciation of the recognition she gave me, in naming several new forms. You mention that her stratigraphy does not quite accord with ours, and in checking hers (pp, 16–17), against my latest geologic column (of Oct. 1924), I find the following:

	Miss Maury	Waring
Freeport-Todd's Road	Upper Miocene	Lower Pliocene
Springvale	Upper Miocene	Upper Miocene
Brasso	Middle Miocene	Upper Middle Miocene
Godineau River	Middle Miocene	Upper Middle Miocene
Manzanilla	Lower Miocene	Upper Middle Miocene
Machapoorie	Lower Miocene	Upper Middle Miocene
Tamana	Lower Miocene	Upper Middle Miocene

> "The discrepancies seem to be chiefly as to Godineau River, which we place equivalent to Machapoorie; and Manzanilla, which we place as Upper Middle instead of Lower Miocene. This can be taken care of, I suppose, in a footnote to our paper, in accordance with your latest determinations."[105]

These excursions into foreign countries were not without their hazards, especially medical, and after his 1924 trip to Venezuela, Harris suffered from an illness and it took him many months to recover:

> "I regret to state that I have been doing practically nothing this fall since I returned from Venezuela, having contracted amebic dysentery while there and having been confined to the house or hospital most of the time."[106]

This illness continued to trouble Harris and almost a year later he received this letter:

> "I am very sorry to hear of your illness, in which you have my sincere sympathy, for I had amoebic dysentery for thirteen months some years ago . . .
>
> "I am glad for the few remarks on Trinidad stratigraphy which you were able to give me in spite of your sickness, . . ."[107]

Not only was Harris venturing into foreign lands, but as indicated above, his students were doing the same thing, often in more exotic places and conditions than their professor. Olsson worked in Panama and Costa Rica, Liddle in Venezuela, and in 1921 Harris received a letter from Dean E. Lounsbery[108] (BS '19). Not only does this letter describe the hardships endured while doing geological fieldwork, but it illustrates the willingness with which Harris' students apparently undertook such tasks; a willingness they, no doubt, acquired through their association with Harris. Another interesting point about many of these letters which came back to Harris, aside from the geological discussion, is the political insight they show. Perhaps this is a measure of the broadness of the education they received from Cornell and from Harris. Lounsbery wrote from Ponnagyun, Burma:

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[100] R. A. Liddle to Gilbert D. Harris, October 15, 1923. HA-PRI, Ithaca, NY.

[101] Further support that he was in Venezuela in 1923 comes from this quotation: "After spending two months in Venezuela a [*sic*] stopped by in Trinidad for two weeks. . ." Gilbert D. Harris to H. G. Kugler, December 25, 1923 (original). Kugler File, Trinidad Box, HA-PRI, Ithaca, NY.

[102] C. F. Bowen to Gilbert D. Harris, September 5, 1922. HA-PRI, Ithaca, NY.

[103] Gilbert D. Harris to H. G. Kugler, December 25, 1923 (original). Kugler File, Trinidad Box, HA-PRI, Ithaca, NY.

[104] Probably Maury, 1925, which was published March 27, 1925.

[105] G. A. Waring to Gilbert D. Harris, April 27, 1925. Waring File, Trinidad Box, HA-PRI, Ithaca, NY.

[106] Gilbert D. Harris to H. G. Kugler, November 11, 1924. Kugler File, Trinidad Box, HA-PRI, Ithaca, NY.

[107] J. A. Bullbrook to Gilbert D. Harris, September 3, 1925. Waring File, Trinidad Box, HA-PRI, Ithaca, NY.

[108] Later Assistant to the Vice President for Land and Geological Department, Phillips Petroleum.

> "I haven't forgotten my promise to write, but in fulfilling that promise, I must admit a decided slowness on my part. I cannot imagine that almost a year has passed since I started globe trotting. In that year I have done considerable traveling especially in India, for a young blood; on the go almost continually since last January, but far be it from me to complain or kick for I am having the time of my life, and later on I will be sure to realize that is so, even more than now.
>
> "Last season from January to April I was with the party of D. D. Condit, formerlly [*sic*] of the U.S.G.S., which was conducting a rapid reconnaissance of the foothills adjoining the Kirthar Range in Sind and Baluchistan. There were two others in the party—Mr [*sic*] Nuttall, 23; and Mr [*sic*] Maynard, 24, from Chicago, a protege of Prof Salisbury's. We covered a large amount of territory, and most all by camels; the joys of riding via camel are to be compared with seasickness in the last degrees, and coupled with that there is always the unpleasant and nauseating odor emanating from the camel's nostrils. We always had siwars or mounted guards who sat in front of the hump to drive them, water being scarce and the siwar naturally dirty, you can figure the rest.
>
> "The country was rugged and barren of vegetation-a true desert. Water was very scarce at many places, and the natives said that there had been no rain in the last three years and only once in the last five. The geological end however was very interesting. Formations were very distinctive and one had little trouble in identifying horizons. The main Tertiary formation of the area is the Kirthar Nummulitic Limestone, and there was never any doubt about it, as whereever [*sic*] found it was always abundantly filled with Nummulites[109], of several distinct and easily identified types. During the season we found and mapped many beautiful anticlines and they were certainly excellent to look at from the standpoint of structure. We failed, however to locate any proof of petroliferous horizons underneath them. . . .
>
> "By the Middle [*sic*] of April the weather was so hot that further work in the field was very near impossilbe [*sic*], let alone foolish. . . . The Company maintained a summer headquarters at Dalhousie, a beautiful little hill station at the edge of the outer Himalayas. The elevation there is 7,000 feet, and consequently cool throughout the hot season. All of the staff with the exception of Dr. Wrights [*sic*] party came there to do office work, the latter being in Assam, the most convenient station was Shillong. The atmosphere there proved very pleasant to Mr. Weeks[110], and he was captivated by a very nice English girl, who last October became his wife.
>
> ". . . The moonsoon [*sic*] lasted until the middle of September, and then Dr. Knox, who is my present chief, and I started off into the Himalayas to do a little mountain climbing. . . . Various places along the route chosen afforded log rest houses. The highest pass which we went over was in the Central Himalayas at an elevation of 14,400 feet. On that particular day, unfortunately for us, there was a howling snowstorm [*sic*] in progress, which prevented taking any pictures of the first range of the Inner Himalayas. . . .
>
> "This season the Company sent us into the Arakan coast region of Burma. The country so far as geology is concerned is virgin soil. The Indian geological staff has examined and reported on only the costal [*sic*] and accessible regions. The Burma Oil Company geologists did some work in here, but so far as we can find out, they did not trouble themselves much where the jungle growth was thick. Our program calls for a complete examination of the entire strip, clear up to the Arakan Yomas. True enough the jungle is thick but one can always get through as there are many trails both animal and native. When I first heard of our assignment, I had visions of wild animals, snakes, leeches and jungle, as all were reported by the party in Assam. So far, I would not ask for a more ideal place to geologize in. We have not seen any tigers, wild elephants or bison; all terrors of the jungle, and as for snakes, they two [*sic*] are scarce. Malaria is very bad during the rainy season, but we will leave before that time. . . .
>
> "India is all astir now that the Prince of Wales is out here. The non-co-operatore are getting bolder every day and it will not be long before the government will have to step in and call a halt. Mr [*sic*] Ghandi's influence is very far reaching amongst the Hindus and the sooner things are brought to a showdown the better. Circumstances are getting graver in the Punjab every day as that has been the seat of all the trouble. I am not at all sorry that I am in Burma this year. The effect of Irelands [*sic*] being granted a Free State will have considerable influence here."[111]

Such consulting work, aside from the adventure, also paid the young people well. In 1922 after completing his work for the Sinclair Oil Company in Costa Rica[112]

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[109] A type of fossil foraminifera.

[110] Believed to be Lewis George Weeks, a graduate student at Cornell, 1919–1920, who later worked with Standard Oil Company (New Jersey).

[111] D. E. Lounsbery to Gilbert D. Harris, December 18, 1921. HA-PRI, Ithaca, NY.

[112] Not above a little politics as well as geology, A. C. Veatch, who was then working for Sinclair Oil company, suggested to Harris that Olsson dedicate the Costa Rican work to the National Museum or to the ". . . scientists of Costa Rica. This I think desirable from a company standpoint." A. C. Veatch to Gilbert D. Harris, January

(Olsson, 1922), Olsson wrote to Harris that he had been hired as a paleontologist for $5,000 per year by the International Petroleum Company[113], and by February of that year he planned to be in Peru.

In fact, for Olsson, the constant lure of consulting work kept him from completing his Ph.D. Each time he would return to Ithaca to begin the residence requirements and his thesis on the Miocene of Virginia, he would be hired for another overseas assignment. But that did not stop his interest in scientific work and Olsson published almost 4000 pages of material during his career, a total that does not include the countless pages of company reports that he wrote (Moore, 1978). Olsson's 1922 trip to Peru was the beginning of nearly 30 years of work in South America, work in which he was so successful[114] that the companies gave him freedom of movement and unrestricted permission to publish on the material he found[115]. Olsson and Harris formed an effective team, Harris with *Bulletins of American Paleontology*, the avenue for publication, and Olsson with a constant stream of new fossils from his oil company explorations. For Peru alone, Olsson's collections resulted in seven major works, 750 pages and 128 plates, on the paleontology of that country (Olsson,1928, 1929, 1930, 1931, 1932, 1934, and 1944), which Harris published.

Material returned to Harris by his former students working in foreign lands would also often provide the samples for others to study. For example Palmer (1923) used material sent from Costa Rica by Veatch and over 20 years later she used samples collected by Weisbord (Palmer, 1945).

As one reviews the many letters Harris received from his former students as they pursued industry and other tasks, one cannot help but be struck by what a difference their geological training made in their view of the world when compared to non-geologist. These young people saw a different world before them than the one seen by ordinary citizens. In reading one of Olsson's letters, written shortly after his arrival in Peru, one imagines how differently a non-geologist would have described the scene; one feels the excitement Olsson must have felt as he gazed at this Peruvian landscape for the first time. He described the landscape with these words.

> "Back a short distance from the sea, the country is generally high, a flat plain or tablayo covered with Pleistocene gravel. This plain near the coast and along the dry rivers is chiefly dissected by dry arroyas or gullies revealing the Tertiary rocks underneath. This dissection results in a badland sort of topography with most wonderful exposures so that the whole structure and relations of the beds is laid bare before ones eyes. It is a most ideal country for geology I have ever seen."[116]

Others with foreign assignments included the Hodsons, Floyd and Helen (Hodson, F., 1926; Hodson, H., 1926; Hodson, F. *et al.*, 1927; and Hodson and Hodson, 1931), and Norman E. Weisbord (1929, 1934). Weisbord, like others before him, took an interest in the local politics as well as the geology; at times he was in considerable danger himself. From Cuba in 1931, Weisbord sent Harris a description of the political and social conditions of the people and a hypothetical, but all to real, description of how certain government officials might operate. The conditions he described eventually led to several revolutions and much political instability on the island. Also, Weisbord's comments show how corruption in one country is often supported and exploited by others, even by people in our own country:

> "But enough of geology and on to politics. The revolution is definitely over tho [*sic*] there are occasional rumblings of another one brewing. Tho [*sic*] our press generally treats these political upheavals in a comic operatic vein they are serious affairs frequently resulting in loss of life, economic paralyzation and a bitter aftermath. I was in a sense in the thick of it inasmuch as I was working in the field all the while, tho [*sic*] my movements were constantly hampered by the rural guard who always had to examine my stuff and cross examine me. I protested in one place and got a good crack over the shoulder with the soldier's rifle and for a moment I thought the darned thing might go off. It is a sinking sensation to have a gun waved in front of you by an exceedingly mad soldier (who perhaps had had no sleep for several nights and very much on edge). I thought of lots of things during the interval. I was sent up to the guard house to the seargent [*sic*] for carrying khaki clothes (prohibited) a medicine chest and sundry instruments which looked like bombs I guess. The seargent [*sic*] . . . [had] . . . a kind, dumb face and I wheedled permission to go on

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23, 1922. HA-PRI, Ithaca, NY. Olsson did mention the "Officials of the National Museum of Costa Rica" and "Dr. A.C. Veatch" in the "Preliminary Remarks" to the paper (Olsson, 1922), although there is no record that Veatch ever actually graduated from any college (Heroy, 1942).

[113] A. A. Olsson to Gilbert D. Harris, January 22, 1922. HA-PRI, Ithaca, NY.

[114] One well in 1924 was the largest gas well ever drilled in Peru up to that time with 26,000,000 cu. ft. of gas. A. A. Olsson to Gilbert D. Harris, February 26, 1924. HA-PRI, Ithaca, NY.

[115] Sometimes there was a delay with that permission, "In a couple of years or so, there should be no reason why the stuff cannot be published, but at the present time the company is very close on giving out any kind of information." A. A. Olsson to Gilbert D. Harris, February 26, 1924. HA-PRI, Ithaca, NY.

[116] A. A. Olsson to Gilbert D. Harris, February 21, 1922. HA-PRI, Ithaca, NY.

> ahead. I showed him my passport which he scrutinized and said it looked alright [*sic*] but it *was* somewhat difficult to read. Since the incident I don't talk snotty to any soldiers.
>
> "Of the various Latin countries I have visited, this one seems to be the most corrupt politically, possibly because I've been more exposed to it here. The revolution was entirely warranted, tho [*sic*] it is quite possible that the new regime would have been as bad as the present and in all probability worse. There is no more thought of service to the people than there is common honesty in higher circles. Our own government is bad in spots, let's recognize it, but we do have some legislators and executives with a really earnest desire to do the right thing. This is usually very difficult in a democratic form of government hence our frequent failures. But here the prime reason of holding office is for the graft involved. The higher the circle the bigger the 'reward.' Compared to Venezuela which is avowedly the most autocratic of the South American states, this system is elephantine in its corruption compared to measly Venezuela which hasn't a penny [of debt] outstanding. This lovely little island of perhaps 4 million people is in debt to the tune of nearly a *half billion dollars*—with hardly anything to show for it. Here is the way its [*sic*] done, with the connivance of U. S. banks. I'm Joe President, let us say. I can't milk my people any more they're dry—have been since the 'gorda vaca' or dance of the millions during war time when sugar was selling for over 20 cents a pound. Well now, I and my clique have to have some money. We get our crooked heads together and we conceive of a great highway to span the entire island. We don't need such a highway for 50 years to come but it looks nice, it makes a show for tourists and above all it gives us a chance to get in on as easy a dollar as ever trickled thru [*sic*] the financial sieve. I, as president, controlling every phase of the government get Congress to pass a bill authorizing let us say 50 million dollars for highway 800 kilometers long, done up pretty good style. If congress doesn't O.K. this plan, why by hooky I'll take the lottery rights away (another prolific source of 100% graft). Congress benignly passes the bill without a whimper. That item taken care of, I have to get 50 million dollars. That's easy! We call in Mr. Bullblower of National City Bank and say we want 50 million dollars. Mr. B. says alright [*sic*] that can be arranged quite top hole. Cuba floats a public works loan of 50 million dollars, the National City Bank underwrites it giving public works let us say 40,000,000 dollars—that is they actually pay 90 dollars for a 100 dollar bond or some such figure. Public Works now has its 40,000,000 dollars. National City Bank gets its crew of nifty looking bond salesman and the talk is bruted around that National City is offering, 'as, if, and when' with all the proper phraseology and sleek looking salesman oiling the selling machinery. Result is National City sells its bond issue to a gullible public. Tom Citizen, a poor sucker who has a thousand dollars saved up from teaching school or tightening nuts on an automible [*sic*], goes in to what he thinks is a big, reputable house and he comes out with a Cuban bond yielding 6%, the interest on which raised in part by another bond issue.
>
> "Well this leaves National City with a fat profit of let us say 10,000,000 dollars and Public Works with 40,000,000 for the great highway. An American firm representative, used to Latin American road contracts is called in to conference and emerges with a fat contract. The secret figure which Mr. American gets is 50,000 dollars per mile, which is certainly plenty and then some. Of course Mr American bills Obras Publicas for 140,000 per mile and distributes the balance between *his* profit as entrepreneur and what he bills Public Works. The balance which you will agree is goodly is distributed among close members of the 'gran departmento de Obras Publicas.' Mr. American is paid promptly because as soon as he's paid the largess is distributed and memebers [*sic*] of Obras Publicas have hungry mouths to feed! So the great thing goes thru [*sic*]. Yawping [*sic*] tourists come down and see the nice carretera and beautiful capitolio and rave about how advance Cuba is. The debts pile up—they can never be paid, will eventually be repudiated. Who suffers? Tom Citizen, the gullible American citizen who believes in great big institutions, and the great mass of Cuban people who are deprived of essentials. Thus Joe President reduces teacher's salaries so that the interest on Public Works can be paid. Officialdom and National City Bank get big swigs at the 'botella' (bottle) whilst we eventually pay the price.
>
> "There you have it. I have no figures to back me up, other than the fact that the central highway which is a fair job, cost 140,000 dollars per mile. Compare this with costs in the States for an A-1 super-fine, reinforced concrete road with all sorts of emellishments [*sic*] (20,000 per mile would cover it) and you can see that something is damn rotten in Denmark." [Parentheticals and emphases in the original.][117]

Eventually the clouds of war overtook the world and letters from Harris' former students carried descriptions of war preparations as well as geological ones. Weisbord was working for Island Exploration company in Papua, New Guinea, in 1939, only six months before the beginning of World War II. Yet the war clouds did not dampen his spirits nor interfere with his recreation which included both old and new games:

> "Two days ago arrived a detachment of 40 Australian soldiers and several big guns destined for the protection of Port Moresby in event of war. A naval and air base is being established as well so that the place is developing, one way or another, quite rapidly and quietly.
>
> ". . . a suburb of Port Moresby, is the site of the technical staff. Fortunately it is located adjacent to the golf course, so that after hours I can get my swearing done early and keep at it until nightfall. Golf is a game, the emotional graph of which closely resembles a business chart with

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[117] Norman E. Weisbord to Gilbert D. Harris, November 3, 1931. HA-PRI, Ithaca, NY.

> long periods of depressing lows and brief peaks of soaring highs. It is a game unsuited to my temperament since it affects my sensibilities too much. Between strokes I run the whole gamut of reactions and since I am a duffer these reactions may make me apoplectic. . . .
>
> "In one of the weekly cricket matches I was given the opportunity of playing and, according to the local paper, 'delighted the crowd with my baseball antics.' You probably know as much about game as I do. I never handled a cricket bat before. You're supposed to keep the ball away from the wicket by smacking the ball before it hits it. Since the ball bounces first and comes with terrific speed and all sorts of twists it's not as easy as it looks. I hit a number of foul tips which to my surprise counted for runs so I rolled up a better score than some of the blokes who have been playing since childhood. Came a ball, however, which I missed and which knocked over the little ticks and did I feel sheepish. Still I got a good hand from the fine, sporting crowd who go a big kick out of my unconventional stance."[118]

No matter where they went, the former students continued to send Harris fossil collections whenever possible. This continued especially after he started the Paleontological Research Institution:

> "As a souvenir from New Zealand for the Paleontological Research Institution, I have sent you a fossil moa bone. I believe it is the fused tibia and tarsus or the lowest part of the leg which was covered with feathers. It belonged to the largest species *Dinornis maximum* and the bird in life probably stood almost 14 to 15 feet high"[119]

Thus consulting activities served as a valuable resource for Harris and his students. For the students these activities provided adventure, meaningful employment (especially during the depression years of the 1930s[120]), an opportunity to make a meaningful contribution to science, and, in some cases, the opportunity to explore the unexplored; to be true geological pioneers, following in the footsteps of other former Cornellians such as Hartt, Derby, and Branner. For Harris, the rewards came from advancing the understanding of Tertiary strata, building his fossil collections, and, as it turned out, the financial return. Apparently his consulting work allowed him to gradually build a nest-egg that could be used to start the Paleontological Research Institution in 1932. Without the financial rewards he reaped through the consulting activity, it seems unlikely that he would have had the necessary resources during the depths of the Great Depression to found his own institution.

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[118] Norman Weisbord to Gilbert D. Harris, March 26, 1939. HA-PRI, Ithaca, NY.

[119] Axel A. Olsson to Gilbert D. Harris, August 4, 1939. HA-PRI, Ithaca, NY.

[120] "Very soon now I shall have to decide whether to go away again (the Company wants me to return to the East when my time is up) or stay in the States as another member of the unemployed." Norman E. Weisbord to Rebecca Harris, September 21, 1939. HA-PRI, Ithaca, NY.

CHAPTER 7. CARLOTTA J. MAURY

One incident occurred between Harris and a former student which, when compared with his relationships with other students, appears to be totally out of character, and had a profound influence on his later life. The incident was a very serious affair for the student, for Cornell University, and for Harris. It may also have sown the seeds of distrust and discontent that, seven years later, would lead Harris to break completely with Cornell and found his own organization, the Paleontological Research Institution. It is therefore treated separately with considerable detail.

Before describing the disagreement Harris had with Carlotta Maury, however, it is useful to consider an earlier episode which, perhaps, sets the tone for what followed. The first record of a serious disagreement between Harris and an outside party comes from a note Albert W. Smith, Acting President of Cornell, sent to Heinrich Ries accompanied by a copy of a letter from Professor Junius Henderson at the University of Colorado at Boulder:

> "Since this is a question that may affect seriously the good name of the University I would ask you to take prompt measures to adjust the matter so that it is satisfactory to Professor Henderson."[1]

The "question" mentioned was this. In 1917, after corresponding with Harris, Henderson sent him a box of fossils from the western U. S. containing more than

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[1] Albert W. Smith to Heinrich Ries, July 7, 1920. Schurman Papers 3/4/6, v. 47, p. 263. Also a copy in the Heinrich Ries Papers 14/15/691. RMC-KL, Cornell.

150 species. In return Harris was to forward examples of New York Devonian fossils. There were receipts signed for the fossils and several letters exchanged, but Harris did not complete his part of the arrangement, and, according to Henderson, Harris would not even answer his letters. So Henderson appealed to the University President:

> "Cornell University has our material and it seems hopeless to make any further appeal to Professor Harris. I am told that he has treated other paleontologists in exactly the same manner. I do not believe he has any intention of being dishonest or unfair, and suppose he will justify his failure to keep his promises made on behalf of Cornell by saying that he has been too busy to attend to it, or something of that sort. Nevertheless, the effect upon those who have dealt with him is the same as if he had deliberately started out to steal their material, so far as actual results are concerned."[2]

Harris was out of town at the time Smith's note reached Ries, but upon his return, Harris wrote to Ries stating that he had received the 157 species and that Henderson wanted a similar sized collection of Devonian and Atlantic Coast Miocene fossils in return. He said that he had planned to have Axel Olsson put together the collection Henderson wanted, but Olsson left for a six-month stay in Panama that turned into two years. Olsson, however, had now returned and Miss Katherine van Winkle was there to help. Henderson's collection was right in front of him, "continuously in view", and the samples requested could be sent with, "justice to ourselves and satisfaction to Henderson." Harris continued:

> "So far as I am aware I have answered all communications rec'd [*sic*] from him and have tried my best to explain the delay and cannot understand his caustic imputations."[3]

This exchange with Henderson must have brought Harris' temper to the foreground; based upon Henderson's reply, Harris must have sent him a scathing letter, but no copy of it exists. Apparently Harris, among other things, asked for the list of people he had, ". . . treated the same way." Henderson was quite apologetic in tone, but stood his ground and did cite his source:

> "In the first place I have not intimated, as you say, that you have been swindling a long list of unfortunates these past years. Neither have I made any sweeping charge as to your general character, as you declare. I explicitly said that I did not believe you had any intention of being dishonest or unfair, and that you would doubtless explain the long delay by saying that you were too busy to attend to it. . . .
>
> "I regret that I cannot send you 'the long list of unfortunates' that I 'intimate' you have been 'swindling these past years,' for the very good reason that I have made no such intimation of a long list of unfortunates. I did say that I had been told that you had treated 'other paleontologists' the same way. I would very willingly give you the name of the man who told me that, but his name has escaped me entirely. . . . One of these geologists (I believe he was in the employ of the Toxana or Mid-West company [oil companies], though I am not sure) spent several hours here, and we got to talking incidently about exchanging material. In reply to his inquiry as to where we got certain unusual material I told him of some of our exchanges, and just incidentally remarked that I sent a lot to you for the purpose of getting some more Miocene and Devonian material, two or three years ago, but had not yet received the return collection because Mr. Olsson had been called away at that time. He began to laugh, and said that there were 'others' who had had the same experience: that he himself had sent you material some time before for which he had received no return. He had no thought of dishonesty on your part, he said. . . . If he deliberately lied to me, then you certainly know it. If he told the truth, then you of course know who he is."[4]

The incident related here is trivial, except that it does demonstrate the strong reaction that came from Harris when he thought he had been wronged. His temper does not show itself very often in the written records that survive or in the various personal anecdotal remarks, but this small incident certainly demonstrates its existence. Perhaps that temper played a role in the difficulty that developed about six years later with Maury. Certainly, given knowledge of the situation with Henderson, Harris' temper does manifest itself in his letters to her company.

The Maury incident began in 1925–26 over an alleged breach of confidentiality and ownership of samples kept on the fourth floor of McGraw Hall (Plate 11). Carlotta Joaquina Maury was working for one group of oil companies and Harris was a consultant to another. Maury was born in Hastings-on-Hudson, New York in 1872,[5] and lived there in the ancestral home of her mother, Virginia Draper Maury, for most of her life when she was not out of the country.[6] Maury lived the last two years of her life in Yonkers, New York.

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[2] Junius Henderson to President of Cornell University, July 7, 1920. Schurman Papers 3/4/6, v. 47, p. 264. Also a copy in the Heinrich Ries Papers 14/15/691. RMC-KL, Cornell.

[3] G. D. Harris to Heinrich Ries, July 29, 1920. Heinrich Ries Papers, 14/15/691. RMC-KL, Cornell.

[4] Junius Henderson to G. D. Harris, August 10, 1920. Heinrich Ries Papers, 14/15/691. RMC-KL, Cornell.

[5] Notes on her life are taken from her obituary in the *New York Times*, Tuesday, January 4, 1938, p. 23, and from *Who Was Who in America*, v. 1 1897–1942, p. 791, Chicago, A. N. Marquis Company.

[6] In the Harris Archives is an undated post card photograph of a very fine looking dwelling labelled "The Old Draper Homestead,

Her sister was Miss Antonia Coetana de Paiva Pereitra Maury, a former research astronomer at the Harvard Observatory.[7]

Contrary to the story which has circulated around the Cornell Department of Geological Sciences for many years, and repeated in the department history (Brice, 1989), Carlotta Maury was only distantly related to the famous oceanographer Matthew Fontaine Maury through her father's family; she was not his daughter or granddaughter. Her father, The Reverend Mytton Maury, D.D., the son of William and Sarah Mytton Maury, was born near Liverpool, England and came to the United States in 1849. Mytton's father, William Maury, was an English cousin of Matthew Fontaine Maury. Matthew Maury worked for the Confederacy in England during the Civil War. Unable to return to the United States immediately after the war, he lived in Mexico for a while and, with the help of Empress Carlotta of Mexico, he tried to organize and settle "New Virginia, Mexico." Eventually he did return to the U.S. in 1868 (Corbin, 1888; F. L. Williams, 1963). Aside from his oceanographic work and naval career, Matthew Fontaine Maury is best known for a series of school geography texts, Maury's Geographical Series. After Matthew's death in 1873, Mytton Maury, Carlotta's father, served as editor of these books from 1875–1895 (M. F. Maury, 1891).

After attending Radcliffe, Columbia University, and the University of Paris, Carlotta Maury came to Cornell and completed the Bachelor of Philosophy in 1896, but then, according to Harris, she left for a term or two:

> "Miss Maury, who spent a year in France after holding a fellowship in this department, has been unable for financial reasons to take her second degree this year, though she will soon fill all requirements for the same."[8]

She did, indeed, return and completed her Doctor of Philosophy degree in 1902. She was the first woman to obtain a Ph.D. degree in geology at Cornell, and was among the first women in the United States to earn a Ph.D. in geology[9]. Her thesis was published as Number 15, Volume 3 of the *Bulletins of American Paleontology* (C. J. Maury, 1902).

Right from their first days together as student and teacher, Harris and Maury appear to have developed a very close working relationship. One example of this can be seen from the work she did on fossils collected at a site along the western shore of Cayuga Lake, between Taughannock Falls and Frontenac Beach. Apparently the location was first noticed by Harris' colleague, R. S. Tarr. The site is now known as "Fernbank", a name whose origin is unknown and which is not included in any local history archive.[10]

Apparently while she was a student, Maury and Harris visited the site together, for the date, May 1897, is on the handwritten fossil identification cards.[11] In this small side valley along the shore of Cayuga Lake, Maury and Harris collected fossil freshwater shells that are of the same mollusc genera as found in the lake today. In 1908, Maury published a brief description of these shells, which were deposited during a warm interglacial stage when water in Cayuga valley was about 15–18 meters above its present level (C. J. Maury, 1908). More recent inspections indicate the lower part of the section to have been deposited during a high water, warm climate period. Then there was a short period of erosion, followed by high water again, but with a much cooler climate. Radiocarbon dating of the plant material in the upper portion has produced ages greater than 50,000 years. The site remains difficult for glacial geologists to explain because, although it correlates well with the Don Beds of Toronto, Ontario, it remains unique in the Cayuga Lake valley, and so far as is known, unique in the entire Finger Lakes region.[12]

Maury had a marvelous career after leaving Cornell and during most of this time her relationship with Harris was one of cordiality and mutual respect, at least if the following letter Harris wrote to Branner is typical:

> "I received with pleasure your note from Brazil last summer, and I believe Dr. Derby[13] has written my illustrious student [Maury] this summer of [*sic*] South Africa, if it may be possible to make the arrangements to have her

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200 Years Old—Hastings-on-Hudson" with the message, "Come see us. Carlotta." HA-PRI, Ithaca, NY.

[7] Antonia Maury was a colleague of William Pickering at Harvard Observatory and she did pioneering work in star classification by spectral analysis; eventually she published a catalog with the spectral classification for about 4800 stars.

[8] *Annual Report of the Department of Paleontology and Stratigraphic Geology*; 1899–1900, by G. D. Harris, p. 5. HA-PRI, Ithaca, NY.

[9] John W. Wells, Personal communication, July 15, 1982.

[10] Personal communication, Professor Arthur Bloom, Cornell University, June 22, 1995.

[11] One set of samples is in the possession of Professor Arthur Bloom at Cornell University. Who prepared the hand written identification cards is unknown, but the handwriting is very similar to Carlotta Maury's.

[12] For this brief summary, I am indebted to Professor Arthur L. Bloom, Cornell University, personal communication June 22, 1995, and the loan of a guidebook he and John H. McAndrews, Royal Ontario Museum, prepared for the "Friends of the Pleistocene", 35th Annual Reunion, May 19–21, 1972.

[13] Orville A. Derby (B.S. '73; M.S. '74), student and colleague of C. F. Hartt, did not have a Ph.D.

> come and look over the Museum at Rio Janeiro [*sic*] in the near future."[14]

Maury did develop a connection with Derby and the Brazilian Geological Survey, and several years later, Harris again wrote to Branner:

> "I note what you say regarding paleontological work for Brazil. Now it so happens that Dr. Morey [*sic*] has been doing a magnificent, great piece of work for the Brazilian Survey, and is thoroughly familiar with, presumably all, the horizons . . . ,and it seems to me that she is the logical one to take this work up [for pay] and put it through, as she is not at leisure to do this class of work. Her great monograph on the Brazilian fossils contains twenty-four large quarto-plates, and is certainly on a par with, and I think superior to, Clarke's[15] monograph on the Devonian of Eastern Brazil. If, however, the fossils were sent here, and she, for any reason, should be obliged to leave the work unfinished, I will guarantee that it will be taken care of at once by competent hands here in the laboratory."[16]

Harris wrote to Maury after she had been to Brazil and returned to South Africa where she was teaching at Huguenot College:

> "Feb. 9, 1914
>
> "Miss C. J. Maury,
> Huguenot College,
> Cape Province,
> South Africa.
>
> "My dear Miss Maury:
>
> "Your letter from Los Palmos was received today and am greatly pleased at the scientific spirit shown therein. You can depend on me for your illustrations—the more the better; and in case the Brazilian Survey has no funds, I shall do it just as cheerfully without. Moreover, it seems to me that in case the Revolution is on you could send your material and descriptions of species and I could get them out carefully as a Bulletin of American Paleontology. In this case your work would not be buried, Revolution or no Revolution.
>
> "As to illustrations, I have got me a large, six-foot $130. camera and am using it almost exclusively in my illustrations now-a-days, and before you finally decide on your illustrations I shall hope to send you copies of photographic reproductions that may suit you even better than line drawings.
>
> "It seems strange that you should be in South America and should find so many acquaintances and friends, and most of all I was astonished to note the mention of Pacheco, and I wonder if the Crandalls are any relatives of the Crandalls here. This is interesting to me as my own mother's name was Crandall. I hope to see them here some time.
>
> "This must be, on account of haste, a business letter, and I will write you the gossip at some future time.
>
> "Yours very truly,
> [unsigned]
>
> "GDH/MEH"[17]

Upon her return to the United States from South Africa, Maury was awarded the Sarah Berliner Fellowship in Biological Sciences,[18] created by Mr. Emile Berliner of Washington, D. C., in memory of his mother, Mrs. Sarah Berliner , ". . . a woman of strikingly strong and noble personality." (C. J. Maury, 1917a, p. 165). The Fellowship included a cash award of $1,000.00:

> ". . . for studying some biologic science at any university or museum, here or abroad—provided a definite line of study be undertaken and a report upon the results of the same be produced. (Anonymous, 1917, pg. 434)

Maury chose to spend part of her money mounting an expedition to the Dominican Republic, for there had not been any new collections made of the island's fossils in over 40 years (C. J. Maury, 1918). Personnel on the expedition included two veterans of the *Ecphora* trips: Karl Paterson Schmidt[19] and Axel A. Olsson[20]; both, ". . . had the great advantage of having been trained in geological field work by Professor Gilbert D. Harris, . . ." Maury received additional money to pay for an extra assistant from the Veatch Fund for paleontological research at Cornell which was mentioned earlier. Harris outlined the arrangement for Ries in a leave request for Olsson:

> "Will you kindly see that the proper authorities are consulted and the necessary arrangements made for a leave of absence for Mr. Olsson from about May to the end of this term in order that he and Mr. Schmidt may carry out the roughest part of the San Domingo work. . . . Dr. Maury will have general charge of the expedition, going for a short time in June personally, [she] will contribute $300 [for them], whereas I shall turn over $200 of the Veatch fund for the boy's use. This will give them $500 in cash wherewith to collect in Gabb's[21] old localities and make sections

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[14] Unsigned carbon copy, Gilbert D. Harris to John C. Branner, October 4, 1913. HA-PRI, Ithaca, NY.

[15] John Mason Clarke (1857–1925), State Geologist for New York.

[16] Unsigned carbon copy, Gilbert D. Harris to John C. Branner, October 3, 1921. HA-PRI, Ithaca, NY.

[17] An unsigned carbon copy of the original, but with Harris' initials at the bottom; Gilbert D. Harris to Carlotta Maury, February 9, 1914. HA-PRI, Ithaca, NY.

[18] In a letter to Heinrich Ries, Jacob Schurman used the title, "Sarah Berliner Research Fellowship for Women." February 28, 1916. Heinrich Ries Papers, 14/15/691, Box 1, File 1-24. RMC-KL, Cornell.

[19] Schmidt was member of the *Ecphora* expeditions.

[20] Olsson was an instructor at Cornell at the time of the expedition.

[21] William Gabb who had collected and written about the fossils on Santo Domingo in 1873. See C. J. Maury (1918).

> wherewith to determine the true sequence of Tertiary fauna of the West Indian region, ... There is a splendid chance here for Dr. Maury and Cornell to distinguish themselves in Tertiary investigation—and the means (money, strength, brains) are at hand. Now seems the time. [Parenthetical in the original.]"[22]

From this letter, as the two men were going in May and Maury wasn't scheduled to arrive until June, it would seem Olsson and Schmidt were going to be doing field work on the island before Maury arrived.

Maury acknowledged their contribution to the expedition:

> "All the heavy and arduous work of collecting was done by Mr. Schmidt and Mr. Olsson. This involved wading up rivers, carrying heavy packs of fossils, sleeping in the roughest shanties, and undergoing the greatest discomforts, some not unmixed with danger to health and life, but none causing them to falter in the slightest degree." (C. J. Maury, 1917a, p. 167).

For three weeks all went well, but then the work was brought to an abrupt halt by yet another revolution that ". . . assumed menacing proportions." (She seemed to have had her problems with revolutions, first Brazil and now the Dominican Republic.) She described the situation this way:

> "The party arrived at Monte Cristi none to [*sic*] soon, as the Revolutionary party had begun shooting. All Americans took refuge on the United States gunboat *Panther*, and remained on board four days.
>
> "The Dominican residents who did not join the rebels fled to the beach. The town was deserted, the bush full of rebels, bandits and *malo gente*. A return to the field from the direction of Monte Cristi was obviously impossible.
>
> "Proceeding on to Puerto Plata we hoped to strike in from there to Santiago, as under normal conditions a cogwheel railroad connects these towns. But Desiderio [Desiderio Arias, the leader of the revolutionary forces] had captured all the locomotives. Moreover we met at Puerto Plata the American residents of Santiago as refugees who had left all their possessions and secretly fled under cover of night. Several had hidden in the bush without food for some days. Conditions in the interior were such that we were most urgently advised to abandon the attempt to reach Santiago, since Desiderio was entrenched there, and geologizing in the lonely thickets would certainly result in our being shot and never heard of again. The sight of seven dead men on the pier at Macoris convinced us that this was no idle fancy. So with profound regret we were forced to abandon the Santiago section and the study of the blue clay of the Upper Yaqui and Nivaje, but we trust that we may yet accomplish this on a future occasion." (C. J. Maury 1917a, pp. 173–174).

Axel Olsson and Karl Schmidt added to the story; when they were cut off from the rest of the party by the revolution, they managed to get through the rebel front lines by speaking German and pretending to be from Germany rather than from the U.S. (Moore, 1978). This time being "German" was an asset for Olsson; only two years before he had been arrested as a suspected German spy while on the second *Ecphora* field trip with Harris in the Carolinas.

Even after escaping the flames of revolution with her samples, Maury's troubles were not over. She returned to Cornell during the winter and spring of 1916–1917:

> "No sooner was work begun on her collections than it was discovered that materials of a similar character, from the same island, collected forty years ago, would be shortly studied and reported upon [by Pilsbry and Johnson], thus forestalling her in her work and relegating her types and descriptions to the scrap-heap of synomymy [*sic*].
>
> "Weeks and months of strenuous work ensued until finally a work of 300 pages of printed matter and 40 plates was brought out by the privately-owned press in the geological department of Cornell University four days before the rival work was issued! The specific names proposed for the types described by Dr. Maury will therefore ever hold as true names for these life forms and the great and valuable collection will doubtless eventually become property of the University if fire proof accommodations are provided for its reception." [Emphasis in the original.] (Anonymous, 1917, p. 434).

Maury herself described the situation in these words:

> "Since publication and distribution of Bulletin of American Paleontology, No. 29, Sections 1 and 2, comprising the systematic discussions of our Santo Domingo fossils, quite a number of Gabb's 1873 shells in the Philadelphia Academy's collection have been described, without figures, as new species by Drs. Pilsbry and Johnson.[23] No doubt a number of these are not represented in our collections and should be added to the Santo Domingo fauna. Some species, however, described as new by Drs. Pilsbry and Johnson will prove identical with mine and will pass in synonymy, since mine have priority. For, Section 1 (pages 1–120[24]) of Bulletin 29 was published and distributed March 31, 1917 and Section 2 (pages 121–240), April 29, 1917, while Drs. Pilsbry and Johnson's *Advance Descriptions* were not issued until May 4, 1917, as stated on the cover of their separates." (C. J. Maury, 1917b, p. 419).

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[22] G. D. Harris to Heinrich Ries, March 30, 1916. Heinrich Ries Papers, 14/15/691, Box 1, File 1-24. RMC-KL, Cornell.

[23] Original Footnote: "New Mollusca of the Santo Domingan Oligocene, Proc. Acad. Nat. Sci. Phila., designed for the April number which was not issued in April. Advanced separates issued May 4, 1917."

[24] Note that until Volume 36, Number 155, *Bulletins of American Paleontology* had two different sets of page numbers. One referred to the issue or number, and another the entire volume. Here Maury is referring to the page numbers of the issue. The cited reference uses the volume page numbers.

The type specimens from this expedition are now in the PRI collections.

The following year the Harris-Maury relationship continued on the same level of cordiality and respect, albeit with some indication of tension over the funding of her work. Knowing what was to follow, this seems to be the first hint of trouble. Maury wrote to Harris about expenses incurred in obtaining some fossils from Africa. This excerpt from her letter also illustrates the difficulties encountered in obtaining such samples and what had to be done to move them from the field site to the laboratory collection.

> "Replying to your letter I would say that the expenses to be paid on the East African fossils are:
>
> (1) Transportation from outcrop in wilderness to the port which I think was Durban. Due to Dr. F. B. Thompson, Bizara, Pondoland, East.
>
> (2) Shipment from the East coast port to Cape Town.
>
> (3) Transportation by rail from Cape Town to Wellington where the fossils were stored a year for safety.
>
> (4) Transportation by rail from Wellington to Cape Town.
>
> (5) Shipment from Cape Town to Boston.
>
> (6) Transportation from Boston by rail to Ithaca.
>
> Miss [illegible] has kindly paid (2),(3),(4),(5),(6) and this loan is to be refunded to her, also any additional expenses she may have incurred. She will tell you the various amounts. I do not know at all what they were. We are greatly indebted to her for advancing the money and taking all the trouble.
>
> "As regards (1) Dr. Thompson who collected the fossils was most kind and did not charge for all this work nor would he tell me the cost. But I am sure it must have been several pounds and I am sure some such amount should be sent to reimburse him. . . .
>
> "I left with you all the important literature on the Bokkveldt, Port Elizabeth and Pondoland fossils. I was never reimbursed for those pamphlets, which amounts to 10 or 12 dollars, but will present them to your department. I also give my work and various expenses connected with obtaining the fossils as I have no doubt the expenses of transportation will use up or exceed the $50 remaining of the $100 appropriation[25].
>
> "I presume you remember that $50 only was placed in my hands and of that I presented an accounting several years ago."[26]

The first definite record of a problem between Maury and Harris is in a letter to Harris from Avery D. Andrews acting for un-named oil companies. A later letter in this sequence carries the letterhead of "The Caribbean Petroleum Company" and was signed by W. B. Pardee.[27] Andrews' letter, dated September 2, 1925, was in reply to a previous letter from Harris, of which no copy survives:

> "Please pardon our delay in replying to your letter of June concerning the paleontological work which Dr. Maury has been doing for our companies in Venezuela; but correspondence with both London and Venezuela has been necessary in order to reply definitely to your suggestions.
>
> "In the first place I wish to assure you that Dr. Maury has been acting in accordance with the original instructions and agreements made many years ago when our work was commenced in Venezuela. At that time we were the pioneers, and naturally wished to maintain the utmost secrecy concerning our work. Now that the Venezuelan fields are more widely known, we are willing to modify our arrangements somewhat, and suggest that the following procedure can be adopted if it appeals to you as satisfactory.
>
> "We propose that in the future fossils forwarded to Dr. Maury shall be sent as far as possible in duplicate, and that after her study is completed and reports made, one of each duplicate may be retained by Cornell University as a loan from the particular Company furnishing the fossils. A list of such fossils so loaned should be furnished us from time to time, and it should be quite clearly understood that the transaction is entirely in the nature of a loan, and that all such fossils remain the property of the particular Company from whom they are received, and subject to return to that company when desired.
>
> "All other terms and conditions of our arrangement with Dr. Maury remain unaltered, and I particularly invite attention to the agreement that no information accruing from these fossils so furnished will be published without our specific knowledge and consent.
>
> "If this agreement meets with the approval of Cornell University, we shall be glad to put it into effect upon receipt of appropriate advices from them"[28]

Apparently Harris did not reply, and a few weeks later, Andrews wrote:

> "On September 2 I wrote you concerning the Paleontological work which Dr. Maury has been doing for our companies in Venezuela. Not having received a reply, I fear that my letter may not have been received. I have no

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[25] The $100 was an appropriation from the Cornell University Trustees to Harris for obtaining South African fossils from Maury, but Harris had given her only $50 of the appropriation. This information is contained in a letter from Heinrich Ries to Gilbert D. Harris, November 11, 1915, and two days later Harris informed Ries that the South African material had arrived. Gilbert D. Harris to Heinrich Ries, November 13, 1915. Heinrich Ries Collection, 14/15/691, Box 1, File 1-24. RMC-KL, Cornell.

[26] Carlotta Maury to Gilbert D. Harris, February 5, 1918. HA-PRI, Ithaca, NY.

[27] From about 1914 until the 1920s, Harris was a consultant to an oil company in Louisiana which was part of the "Pardee Land Company, Philadelphia, Pennsylvania". There may have been a connection between that earlier company and the W. B. Pardee of the Caribbean Petroleum Company, but unfortunately the signature on the letters cannot be read.

[28] Avery D. Andrews to Gilbert D. Harris, September 2, 1925. HA-PRI, Ithaca, NY.

> desire to hasten your conclusions, but would be glad to know whether my former letter was received and that the matter is receiving your consideration in due course."[29]

There is no known immediate reply to Andrews' second letter either, but Harris did respond the following March, about six months later:

> "I have been looking after the material you sent me some time ago, hoping to be able to hit upon the exact horizon from whence your material was derived; but so far without success. Since it is all practically new no very definite correlations can be made. But, I shall soon send you a complete account of the paleontology of the macroscopic forms, and the plates can be used in the field for further collection and correlation."[30]

Harris then gave brief descriptions of several fossils in the collection sent by Andrews; including representatives of the genus *Rimella* which he said were, "The most striking molluscs in your collection . . ." It is noteworthy, however, how late Harris was with his response and, more importantly, that his letter said nothing about the need to keep a duplicate set of the fossils at the University. Later this was to become quite important.

In November of 1925, from Hastings-on-Hudson, Maury wrote a letter to Harris which seems to suggest their relationship was still cordial:

> "Dear Professor Harris:
>
> "Your letter gave me a real thrill, think of our seeing the *Opus*[31] with our mortal eyes! A hope long since abandoned!
>
> "As I am boarding for the time being in Yonkers [probably with or near her sister], it would be best if you would be so kind as to send the package on to me at: *119 Locust Hill Ave., Yonkers, N.Y.* But Hastings-on-Hudson is best for a permanent address when writing from time to time.
>
> "If the package is in a bad condition perhaps, if you asked one of the boys, like Weisboard [*sic*] or Olsson,they and Mrs. Palmer[32] would be so good as to put on an extra wrapping to protect it safely hither.
>
> "I should have liked very much to have seen Mr. Olsson.
>
> "Isn't it fine about the Bulletins! I should think the British Museum author on Madagascar ammonites[33] would be quite a feather in your Bulletin's cap.
>
> "Best regards and thanks. Sincerely always,
> Carlotta J. Maury [signed]"
> [Emphasis in the original.][34]

The dedication in the "Opus" she mentions further indicates the close professional relationship she had with Harris and the respect she had for him and his work:

> "TO THE PUBLISHERS OF THE
> BULLETINS OF AMERICAN PALEONTOLOGY
> AND
> PALÆONTOGRAPHICA AMERICANA
> DEDICATED BY THE AUTHOR
> WHO HAS WATCHED WITH ADMIRATION THE MAKING
> OF THESE PUBLICATIONS
> FROM THEIR INTREPID INCEPTION
> TO THEIR PRESENT SUCCESS:
> WORKS FOR THE ADVANCEMENT OF PALEONTOLOGY,
> ORIGINAL AND FEARLESS
>
> *Anno amicitiæ tricesimo*"
> (C. J. Maury, 1925, Pg. 157)

This peace and tranquillity, however, lasted only another year. The following December Maury was at Cornell working on samples from the same oil company that had earlier sent samples which Harris had identified. While at Cornell she received a copy of a letter that W. B. Pardee, Assistant Secretary for "The Caribbean Petroleum Company" [at the same address as Andrews] had written to Harris in reply to a letter from him (no copy known):

> "With reference to your [Harris'] letter of November 30th, it is our understanding that Dr. Maury has in several instances sent specimens of fossils to different authorities in order to obtain as much data as possible but, in all cases, the specimens have been returned.
>
> "There apparently has been some misunderstanding in regard to the return of specimens for as stated in our letter of November 19th, it is our desire to assist the Cornell University laboratory as much as possible and we certainly would not discriminate against Cornell. We regret the unpleasantness that this apparent misunderstanding has caused but trust that matters will rectify themselves and

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[29] Avery D. Andrews to Gilbert D. Harris, September 25, 1925. HA-PRI, Ithaca, NY.

[30] Unsigned carbon copy, Gilbert D. Harris to A. D. Andrews, March 6, 1926. HA-PRI, Ithaca, NY.

[31] "*Opus*" probably refers to her 250 page paper on the paleontology of Trinidad (C. J. Maury, 1925).

[32] Norman E. Weisbord (A.B.'24, M.S.'26), a student of Harris who went on to work with various oil companies, *e.g.*, Standard Oil Company, Atlantic Refining Company, and Mobil. He spent many years while with these companies working in South America and the Caribbean. He became a professor of paleontology at Florida State University in 1957. He was a charter member and great friend of PRI. Katherine V. W. Palmer (Ph.D.'25; 1895–1982), also a student of Harris', a founding member of PRI and was present at the laying of the corner stone. She was also the second director of PRI.

[33] Spath (1925).

[34] Carlotta J. Maury to Gilbert D. Harris, November 19, 1925. HA-PRI, Ithaca, NY.

> that there will be no further trouble in regard to the fossils."[35]

Harris did respond to Pardee's letter, but apparently not to Maury herself. A copy of that reply was forwarded to Cornell President, Livingston Farrand, and to Heinrich Ries, Head of the Geology Department. Harris told the company:

> "Caribbean Petroleum Company
> Messrs;
>
> "Referring to the subject over which we now have had considerable correspondence let me state that over a year ago I informed you that I did not consider it proper to send materials here to be looked over and reported upon without conforming to the regulation practice of having it proper [*sic*] labeled and a provision for a duplicate set to remain here for general reference work. You have seen fit to send here a large collection of fossils without my consent and have directed Miss Maury to work it up here. Fortunately we have no objections to Miss Maury personally. But you are taking advantage of help and conveniences here and wholly ignoring just obligations.
>
> "The term ends December 18th and I am asking that you have all packed and shipped by that date as I shall not allow work to go on here of that character beyond that date. If in the future you will conform to the regulations above noted I shall of course do what I can to help you along just the same as with others. And, if I receive your reply within 48 hours stating that you will conform strictly to the above mentioned conditions your specimens will be cared for till the 18th, otherwise I shall not hold myself responsible for whatever may happen to the material.
>
> Yours as always
> G.D. Harris"[36]

Note the reference to the "duplicate set" in his response. When Harris had examined a set of fossils for the same company earlier, and discussed that work in his letter of March 6, 1926, there was no record or mention of any request for a duplicate set of the fossils to be added to the collections in his laboratory at Cornell. Apparently, he was now expecting Maury to do something he did not do himself when he examined fossils for the same company.

Others working on oil company material in Harris' laboratory at the same time apparently did not disclose detailed information about the samples. Note the similarity of the disclaimers, especially the second and third ones:

> "This article is based on more than two years of field work in Venezuela unraveling the stratigraphy and paleontology of certain areas for one of the American [oil] companies operating in that country. We propose here to describe some of the new material collected during this investigation with general reference to type localities and general age determination.
>
> "At some future time when interests of the company for whom the work was done permit, we hope to publish more definite information as to the exact locatity [*sic*] of each collection, the type sections, and the stratigraphic range and age determination of the species described." (F. Hodson, 1926, p. 173)
>
> "Only descriptions of species with general localities and general ages can be given at present, but later when the interests of the company permit, we hope to publish definite localities and stratigraphic ranges for the species." (H. Hodson, 1926, p. 2)
>
> "The collections upon which this article is based were made in Venezuela for an American company. Only descriptions of species with general localities and general ages can be given at present, but later when the interests of the company permit, we hope to publish definite localities and stratigraphic ranges for the species." (Hodson *et al.*, 1927, p. 2)

A further aspect of this issue is related to Harris' own private geological work, details of which have been given in another section. Starting in 1921, Harris was employed as a consultant by several oil companies for work in Trinidad (Trinidad Petroleum Development Company, Ltd.) and Venezuela (Standard Oil Company of Venezuela, for which both Hodsons worked)[37]. But aside from that one time when he did the identification work mentioned previously, Harris does not seemed to have been employed by The Caribbean Petroleum Company. Given the situation, at the very least, this is a major conflict of interest.

Maury's company response to Harris' demand went to her by telegram, and sent in care of the Paleontology Laboratory at Cornell:

> "Miss Charlotta [*sic*] J. Maury
> Paleontological Laboratory
> Cornell Univers., Ithaca, N.Y.
>
> "Prof. Harris has written us giving notice that unless within forty eight hours we agree to certain conditions he will not be responsible for anything which may happen to our fossils and materials now in his laboratory stop we therefor [*sic*] request that you finish your examination and remove

---

[35] W. B. Pardee to Gilbert D. Harris, December 2, 1926. HA-PRI, Ithaca, NY.

[36] A copy of the letter dated December 6, 1925 from Gilbert D. Harris to the Caribbean Petroleum Company is in the Heinrich Ries papers, 14/15/691, File 1-23, and another copy is in the President Livingston Farrand Papers, 3/5/7, Box 20, File 20-51. RMC-KL, Cornell.

[37] Another former student, Axel Olsson, was working for Sinclair Oil Company at this time and he used the laboratory facilities whenever he had company samples to identify.

all materials at the earlies [*sic*] possible date and not later than december [*sic*] eighteenth the end of the present term stop we are telegraphing Prof. Harris as follows quote your letter December sixth just received we will consider your proposals and remove our materials as soon as practicable but with regard to your forty eight hour ultimatum please take notice that for any loss or injury to any of our materials in your possession we will hold you personally and Cornell University strictly responsible in damages unquote please keep us advised by wire

"Caribbean Petroleum Company
"8 5 6 A. M."[38]

Harris replied to the telegram on December 9 by letter:

"Caribbean Petroleum Co.

"Messrs:

"Your Postal Telegram of yesterday was duly received. I note with surprise my, and the University's responsibility over your collection, sent here contrary to my wishes at least under conditions I have never agreed to. This is a new angle, but I accept it with of course proper compensation. Your material has been here now occupying space, you have been furnished heat, light, library and museum facilities for some and whatever any competent committee should judge these facilities worth, I am willing to accept[.] Perhaps $100.00 per months [*sic*] would not be excessive. Please let me hear from you before the removal of your collection and greatly oblige[.]

"Yours always
"G.D.Harris"[39]

It is not hard to imagine the confusion reigning in the fourth floor paleontology laboratory of McGraw Hall, with Harris sending letters to and receiving telegrams from her company, and Maury trying to do her work while getting telegrams telling her to pack up and clear out, and all the while evidently having little, if any, communication with Harris. Based on statements in a letter by Ries, quoted below, very little of what was passing between Harris and her company was being communicated to her by Harris. She was apparently hearing enough, however, to feel very pressured. Finally, perhaps in desperation, on December 10, Maury turned to Heinrich Ries, Head of the Department of Geology, in a letter on which she gave the department as the return address:

"My dear Prof. Ries:

"May I lay before you as Head of the Geological Department of Cornell University, a matter which relates to the University policy towards commercial companies that are carrying on research in the University's laboratories? I wish also to protest against Prof. Harris' threat to eject the material of the company that I represent within 48 hours unless the conditions he imposes are agreed to.

"The company I represent has always been most courteous in its attitude towards the University, and desirous of returning any favors possible in recognition of the privilege of using from time to time the books and fossils necessary for identifying their fossils. A very important collection comprising the first lower Eocene material ever found in the entire Caribbean and Northern South American region was presented to the Geological Department by them some years ago. Were it possible, this depositing of duplicate, labeled sets and types in the University laboratories would have been continued and a few weeks ago, the company asked me to deposit duplicates of the fossils upon which I am now working.

"But I wrote back advising most strongly against this-because [*sic*] I saw that my company was to be betrayed. The University was being used as a decoy to capture a very important set of fossilsfor [*sic*] the use of another company whose interests lie in the same field.

"It is a fact obvious to all that this other company is using as its laboratory the paleontological research laboratory of the University, practically to the exclusion of everyone else. The students are perfectly aware of this and I have heard it much criticized.

"As far as I am concerned I took both my degrees at Cornell. My Dominican collection is deposited here, also the Eocene I spoke of, and many casts of my Brazilian types. I have held two fellowships, one of the University, one from outside, but the work was done here. I cannot but think that the books I have published coming out from this Department have given credit to the University, notably my Monograph for the Brazilian Government, but others as well. Indeed you cannot take up any work on the Tertiary of the Caribbean or Northern South or Central America, without seeing constant references to the work I have done.

"In token of my affection for the University, for years I have left in my will a legacy of ten thousand dollars.

"I mention these details so you may know that I am not merely using the University's laboratory and giving nothing in return.

"I know I am here now only by courtesy of the University, but I wish to ask why, if the University grants the privilege of research here to one Commercial Company, it should deny it to another? Why should one company be granted an entire laboratory for a year, and another be denied the use of a table for a few weeks? Why should one

---

[38] Copy of a telegram (night letter)from Caribbean Petroleum Company to Carlotta Maury, December 7–8, 1926. Original in Livingston Farrand Papers, 3/5/7. Box 20, File 20-51; copy in Heinrich Ries Papers, 14/15/691, File 1-23. RMC-KL, Cornell.

[39] Letter from G. D. Harris to Caribbean Petroleum Company, December 9, 1926. A copy is in Livingston Farrand Papers, 3/5/7, Box 20, File 20-51, in Heinrich Ries Papers, 14/15/691, File 1-23. RMC-KL, Cornell. Also, an unsigned carbon copy on "Paleontological Laboratory, Cornell University" letterhead, is at PRI. HA-PRI, Ithaca, NY.

> company have the right to say to another, if you do not give me your fossils all labelled for my use in the field in which we are rivals, they will be confiscated!
>
> "Very truly yours,
> [Signed]
> "(Carlotta J. Maury)"
> [Emphasis in the original.][40]

Accompanying Maury's original double-spaced letter in the Ries files is a badly typed single-spaced copy, perhaps typed by Ries himself to keep this problem from reaching the department secretary (for obvious reasons), and at the bottom of page two of the copy is, "P.S. I enclose Prof. Harris' letter to the company and their telegram reply to me." Apparently Ries made the copy for President Livingston Farrand and included those items with the copy, all of which were forwarded by Ries to President Farrand.[41] This letter from Maury may have caught Ries by surprise and he may not have been very well informed as to what was happening only a few floors above him. This would be a reasonable assumption, considering the very strained professional and personal relationships that existed among the departmental faculty.

In the Ries papers is a small un-signed and un-dated note in Ries' handwriting. It appears to be the text of a telegram sent to the Caribbean Petroleum Company either just before or after he received Maury's letter. Determining who really instigated the telegram is complicated by the fact that both Ries and Maury had residences on Eddy Street in Ithaca at this time. The telegram read:

> "Please wire me (Eddy Street address) copy of letter by Prof. Harris containing stipulations referred to in first paragraph of his letter of Dec. six, nineteen twenty six." [the word stop written and crossed out.][42]

Given the fact that Ries included the company reply to his telegram with the material he gave the Cornell President, he may have been working on the situation before Maury's letter reached him. Ries' letter to the University President, which accompanied his copy of Maury's letter to him, is dated December 11, only one day after Mary sent her letter to Ries. The quotation given below is from the original letter Ries sent to Farrand. Annotations are added from what appears to be a draft of this letter which is with the Ries Papers. In places the draft has slightly different wording from what he sent to Farrand. Again, it appears Ries was typing his own letters to avoid using the department secretary.

> "My dear President Farrand.
>
> "I [Ries] submit herewith a protest received from Dr. Carlotta J. Maury, relating to her treatment in the Paleontological Laboratory, as well as several communications bearing on the matter.
>
> "This case is brought to your attention on the advice of Dean Ogden, as it involves important matters of University policy and also unfortunately presents other serious aspects.
>
> "Some explanation of the situation is necessary in order that you many better understand the conditions, although the bearing or significance of all the facts stated may not be clear until after you have read the attached communications.
>
> "The Paleontological Laboratory of Cornell contains a remarkably fine collection of Tertiary fossils, many of them type specimens ["species" used in the Ries copy]. I have always assumed that there was no objection to persons using it for consultation and reference, and I do know that some of our graduates who have been engaged in field work for oil companies, have brought their fossil collections back to Ithaca, and individually have spent several months at a time identifying [their specimens]. I have never heard of their being charged for this privilege.
>
> "I understand that Prof. Harris has done considerable work for the Stand Oil Company [Standard Oil] or its subsidiaries. There is of course no objections to this. [The last phrase was left out of the typed copy in the Ries Papers.] Further more for over a year Mr. Hodson[43] and his wife, assisted at times by a stenographer and others have practically monopolized the working space in what is known as the Research room of Prof. Harris' quarters. They have been engaged in working up fossils which they collected in Venezuela for an oil company, said to be Standard. During this period they have worked days and nights, have used any quantity of electricity and water, and so far as I know their company has not paid the University one cent for the privilege, Moreover to facilitate their work electric wires for lights, etc. had been strung in such a careless manner that the insurance inspector reported it. These were altered at the University expense.
>
> "I once asked Prof. Harris if Hodson's company was going to leave with the University a named duplicate set of fossils, and was told that he 'supposed' they would, but he did not state that the privileges extended oil representatives were conditional upon their giving the Department a set of duplicates.
>
> "Hodson's Ph.D. thesis was on the genus Turritella, the specimens of which were collected by him during his work

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[40] Carlotta J. Maury to Heinrich Ries, December 10, 1926. Heinrich Ries papers, 14/15/691, File 1-23. RMC-KL, Cornell.

[41] Badly typed copy of Carlotta J. Maury's letter to Heinrich Ries is in the Livingston Farrand Papers; 3/5/7. Box 20, File 20-51. RMC-KL, Cornell.

[42] Heinrich Ries Papers, 14/15/691, File 1-23, RMC-KL, Cornell.

[43] Floyd Hodson (Ph.D.'26) and Helen Kind Hodson, charter members of PRI. For examples see F. Hodson (1926), H. Hodson (1926), and Weisbord (1926).

for the oil company in Venezuela. I was a member of his graduate committee, and after examining his thesis commented on the fact that although he had described a number of new forms, there was no definite information regarding the localities or horizons from which they came.[44] Mr. Hodson explained this by saying that the company for which he was working had not yet obtained control of the property from which these fossils came, and that consequently for commercial reasons they did not want this information made public.

"I [Ries] mention this because Hodson's and Miss Maury's companies are rivals, working in the same general region (Venezuela), so that if Hodson's company considered it proper to suppress this information, and no objection seems to have been raised against it by Prof. Harris, it seems a little curious that the Caribbean Company should be criticized for doing what is somewhat the same thing. In other words if the latter deposited its specimens labeled as to locality and horizon in the collection it might be very useful for Hodson's company.

"The following facts have been given me by Miss Maury. During the past sixteen years Miss Maury has had approximately 8 boxes of fossils sent her by the Caribbean Company for identification. She had deposited here one large collection which she worked up for the predecessor of her present company.

"The 8 lots referred to above, had few or no duplicates and consequently no extra collection could be left. Although Prof. Harris expressed a desire to get duplicates of the fossils which Miss Maury worked over, he never made any stipulation to her. Moreover all his communication to her company have been sent without her knowledge.

"In the winter of 1925–26, while Miss Maury was in Egypt, the Caribbean company, not knowing that she was away, sent a box of fossils addressed to her at Ithaca. Prof. Harris saw the box and wrote to the company suggesting that he could do the work[45], This he was allowed to do, and was paid for it. So far as Miss Maury knows he retained no duplicate set.

"About May or June 1926 the Caribbean Company advised Miss Maury that another box of specimens had been sent to Ithaca for her to identify, so she came up here and worked on it. No set of duplicates was available to leave here, and Prof. Harris raised no objection.

"In October 1926 Miss Maury came here to work up another small collection. This material fills a box about 20 × 18 × 18 inches. In working it up she occupies two small tables over which there hung one electric light. She has not used over ["not" and "over" scratched out in the Farrand copy, but left in the typed copy in the Ries Papers] about 12 books for consultation, not over 6 of which belonged to Prof. Harris. There were very few duplicate specimens in this last lot of material sent, and the collection has been returned to N.Y. City. The [These] data given in this last paragraph have a bearing on the statements made in Prof. Harris' last letter.

"I am informed also by Miss Maury that in this last piece of work she has referred chiefly to her own collection from San [*sic*] Domingo which she presented to the University. She has for ethical reasons been careful not to look at the material collected by Hodson but she has noticed in passing by the specimens are identified merely by numbers or signs.

"I have given you above such facts as are in my possession, and which it seems to me have some bearing on the attached letters. As the matter is a serious one involving University policy towards commercial companies, I feel that it deserves being called to your attention. Prof. Harris will no doubt wish to explain his attitude, and I think he should be given an opportunity to, Miss Maury also stands ready to answer any questions you may wish to ask her.

"It is gratifying to feel that Cornell possess a paleontological collection sufficiently valuable to be regarded as [the "as" is missing in the copy in the Ries Papers] a standard for reference, and I believe that all workers should be given equal privileges to consult it so long as the University rights are properly safeguarded, and it involves no interference with the work of our regular students, either graduate or undergraduate. I cannot see however that the representatives of any one company should be allowed to enjoy a monopoly.

"It is also to be regretted that any member of the faculty should appear to demand personal compensation for the granting of privileges which do not belong to him, as such action cannot fail to be prejudicial to the reputation of the Department and also the University.

"Yours very truly,
[Signed] H. Ries"[46]

While Ries was sending his letter to Farrand, Maury received the following from Avery D. Andrews, dated December 10:

"Many thanks for your letter of December 9th just received. While the Caribbean Petroleum Company does not itself care to make any complaint against Professor Harris, we certainly have no objection to you, as an Alumnus of Cornell, placing such facts before the Authorities as you may desire.

"In this connection, I have just received a further letter [December 9, 1926], presumably from Professor Harris. The signature is typewritten and over it are the penciled initials 'G.D.H.'. I enclose a copy of this letter which is exact in all particulars, including punctuation. I mention this because it seems rather a crude production to come from a great University.

---

[44] This work was published without listing any localities (F. Hodson, 1926). The list of localities was kept separate and never published; it is in the PRI archives.

[45] Harris' letter of March 6, 1926 about this work is quoted earlier; see page 21.

[46] Heinrich Ries to Livingston Farrand, December 11, 1926. Original is in the Livingston Farrand Papers, 3/5/7, Box 20, File 20-51. A typed copy, with minor differences, is in the Heinrich Ries Papers, 14/15/691, File 1-23. RMC-KL, Cornell.

"Professor Harris apparently wishes us to pay him personally $100 a month for the use of 'heat, light, library and museum facilities' of Cornell University. If the proper authorities of Cornell see fit to make a charge against all persons using these facilities of the University, we will pay our share; but we certainly do not intend to pay any sum whatever to Professor Harris personally for the use of any such facilities which do not belong to him, nor have we any intention of replying to his letter.

"You are at liberty to show this letter to the Authorities, if you so desire.

"Trusting that you will very soon be able to close this work and ship all of our materials, and with best wishes, I am

"Very sincerely yours,
"Signed Avery D. Andrews"[47]

Andrews also sent another telegram at about the same time as the above letter:

"Miss Carlotta J. Maury
"125 Eddy St. Ithaca, N.Y.

"Letters referred to by Professor Harris practically identical first paragraph his letter December sixth of which you have copy stop he stated other companies left duplicates for museum and inasmuch as you had asked help from members of their surveys and made comparisons with their specimens without reciprocating it placed you in embarrassing position.

"Andrew D. Andrews"

Ries added a typed note to the transcription of Maury's telegram, quoted above (based on information presumably provided to him by Maury) which he sent to President Farrand:

"Miss Maury denies the general character of the accusation in last part of message. She claimed that she used only Weisbord and Olson [*sic*] collections for reference, and that these two men have used her books and specimens for reference.

On the same telegram copy in the Farrand Papers is a handwritten note by Ries not present on the copy in the Ries Papers:

"Miss M. claims that in addition to consulting her own collections deposited here she has used only Weisbords [*sic*] and Olsons [*sic*], (This was a thesis), and that they have referred to her books and specimens, and she has given them help." [There was a pencil line drawn from this pencil note up to "their surveys" in the telegram transcription.] [Parenthetical in the original.][48]

The day this telegram was sent, Maury wrote to Ries again:

"In connection with the statement that Professor Harris told the Company I represent over a year ago that certain conditions must be followed if their fossils were to be studied here, I would like to ask this question:—

"Why was it right for him to study the *Rimella* zone box in my absence under circumstances that would be wrong for me? He reported on this box of fossils and was paid to do so.

"If he retained duplicates where are they? And why were they not pointed out to me now when I was studying similar horizons and the person most entitled to have access to them for comparison?[49]

"Perhaps I might add that the Caribbean Petroleum Company has international affiliations, with offices in New York, London and the Hague and is, I think, associated with the Royal Dutch Shell Company.

"Very truly yours,
Carlotta J. Maury [signed][50]

At this point it seems President Farrand asked Harris for an explanation. What Harris may or may not have said in that interview is known only from notes of Heinrich Ries. Ries was certainly not an unbiased observer, and he furthermore put these notes together several years after Harris had retired:

". . . the case of Dr. Maury (C.U.Ph.D.) who came to Cornell to check up some Tertiary fossils for the company she was working for. Harris demanded that she leave a completely labeled set with the University as he claimed others had done (a statement which is not true) and issued an ultimatum to her company that failing to do this he would demand payment for use of laboratory facilities, and that if the company did not meet this condition all their material would have to be removed in 48 hours or he would not be responsible for it. Miss Maury took the matter to the President, to whom she presented a copy of all correspondence (as well as one to myself). Harris when questioned by the President in my presence denied that he had

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[47] Letter from Avery D. Andrews to Carlotta J. Maury, December 10, 1926. Livingston Farrand Papers 3/5/7, Box 20, File 20-51; and a copy is in the Heinrich Ries Papers 14/15/691, File 1-23. RMC-KL, Cornell.

[48] Transcription of telegram from Avery D. Andrews to Carlotta Maury, December 13, 1926. Original transcription with pencil note added is in the Livingston Farrand Papers, 3/5/7, Box 20, File 20-51; the other copy without the additional pencil note is in the Heinrich Ries Papers 14/15/691, File 1-23. RMC-KL, Cornell.

[49] Here, and in the previous paragraph, Maury refers to the work Harris reported in his letter to Andrews on March 6, 1926 quoted above. In this letter there was no mention of any duplicate set of fossils being left at Cornell.

[50] Carlotta J. Maury to Heinrich Ries, December 13, 1926. Livingston Farrand Papers, 3/5/7, Box 20, File 20-51. RMC-KL, Cornell.

> ever made such a demand." [Parentheticals in the original.] [51]

In another set of notes, Ries remembered the events this way:

> "Miss Maury, a Cornell Ph.D., had a bunch of fossils to identify, which she had collected in connection with her field work for an oil company. She assumed that she might have the courtesies of the department and come here to identify them.
>
> "Shortly after she arrived Harris demanded that she leave a duplicate set here. She replied that she was not sure that she had a compete duplicate set, and furthermore would have to get permission of her company to do so.
>
> "Harris thereupon wrote a letter to her company repeating his demand. He said if it was not complied with by a certain date she would have to get out, and failing to do so he would not be responsible for what happened to her material. If she remained [at Cornell] a payment of $100 a month for the use of space, books, light, and collections. He did not say this was to be paid to the University. Miss Maury came to me with a copy of the entire correspondence (which I [Ries] still have). I took the matter to the Dean and he ruled that the President should handle it. I therefor [*sic*] told Miss M. to see Pres. Farrand, which she did, and also gave him a copy of all the letters. Farrand called Harris and myself into his office, and asked the former about it, and whether he had demanded any money of Miss M's company. Harris denied that he had, and Farrand did not contradict him, even though he knew Harris was not telling the truth. He [Farrand] later gave me the lame excuse that a professor could do about what he pleased in his quarters."[52]

Based upon the surviving letters, Ries seemed to have the facts correct, and one therefore may assume he is correct about what transpired at his meeting with Farrand and Harris.

What we know about what Harris put in writing comes from an unsigned carbon copy of a letter he wrote on "Paleontological Laboratory" letterhead to the Cornell President on December 16, five days after Ries filed his letter with President Farrand. Note how different Harris sounds in this letter to the University President after their meeting than he did in his earlier letters to the oil company personnel.

> "My dear Dr. Farrand:
>
> "If there really seem to be any dangers of 'foreign entanglements' at any time, I wish to suggest a way, a rather poor one however, but a certain one out.
>
> "I have had occasion to bring here a considerable number of books, equipments of various kinds, private collections &c, presuming, I think correctly, that the value to work here pays floor-space rental. I confess to having worked hard to have various outsiders, oil companies and others send me materials here to work up, feeling that the space they take up is very trivial in proportion to the help they give investigational studies, and best of all feeling that in practically every case such material will forever remain where last worked over.
>
> "Now, if in handling these materials I have overstepped my proer [*sic*] [proper] authority relative to University matters, I am anxious to apologize most humbly. But so far as partiality to outside individuals or corporations is concerned, anything but the most stupid type of self interest would check the slightest leanings.
>
> "If necessary to protect the University from criticism I can build some roomy apartment, off the University property and collect therein ally [*sic*] my own and these various collections that might possibly cause embarrassments and hence relieve all anxieties. But the expense involved would be considerable and the proximity to my work of my own books instruments, and the various collections while at the University seem to make the carrying out of this plan advisable only as a last resort.
>
> "Your most sincerely,
> Unsigned" [53]

A few days after Harris wrote this version of an apology letter to Farrand (there seems to be no evidence that he ever corresponded with Carlotta Maury again), Maury was again writing to President Farrand. Based on her letter, Harris, or Farrand repeating Harris, must have said something to her about how much work she did in the paleontology lab, and implied that she spent vast amounts of time there doing work for her company, for she seemed to be more than a little upset when she wrote this on December 18:

> "My dear President Farrand:
>
> "That you may know the slight amount of commercial work done by me in the paleontological laboratory of Cornell, I give the following list of *all* my commercial reports, the number of pages, and when recorded, the number of days:
>
> "1912 Large report published in Jour. Phila. Acad. Science, in their de luxe [*sic*], 100th birthday, volume. I wrote

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[51] Un-signed and un-dated typed notes, believed to have been prepared by Heinrich Ries after or shortly before his retirement in 1939. Heinrich Ries Papers, 14/15/691, Box 3, File 3-2. RMC-KL, Cornell.

[52] Although these notes are un-signed notes, the use of phrases such as, ". . . after I became head, . . ." suggest they were written by Heinrich Ries. Based on a note attached to one set of these notes, at least one version was prepared in 1944 for Charles Nevin who was then head of the department. Among the Ries papers are at least three different versions of these notes, each evidently prepared at a different time. Heinrich Ries papers, 14/15/691, Box 3, File 3-2. RMC-KL, Cornell.

[53] Unsigned carbon copy of letter from Gilbert D. Harris to Livingston Farrand, President, Cornell University, December 16, 1926. HA-PRI, Ithaca, NY.

the report and paid Professor Harris to make the drawings. *All* the fossils which were described were brought back by me from South America and presented by the Company I represented to Cornell University. I was not paid to write this report and it was chiefly purely scientific.

"1915 About 1/2 dozen shells sent for identification.
Report maybe 2 pages. No copy retained.
"1922 May 29, A few shells.
Report 5 pages, including summary of past results.
"1924 December 20.
Report 8 pages.
"1925 June.
Report 4 1/2 pages.
"1926 June.
Report 11 1/2 pages. 14 days.
"1926 Dec.
Report 67 pages. 56 days.

"From this you may see how trivial the matter in its relation to the use of the Universities [*sic*] facilities really. [*sic*] has been. It is only this last report which has taken any time worth considering.

"In my letter of protest to Professor Ries, I have mentioned some of the non-commercial Memoirs and Monographs that I have written in the University's laboratories. All have been published and for the most part the collections and types are deposited in the Geological Museum. *All*, indeed, except the types belonging to the Brazilian Government which of course I had to return to Brazil, but whenever possible casts were made of these Brazilian types and are also deposited in the University's Geological Museum.

"My own feeling is this: I am deeply appreciative of the opportunities and privileges the University has afforded me to carry on my scientific work here, but I feel that I have given in return as far as I could. I have given collections; and I cannot but think that I have also brought scientific credit to the University.

"Very sincerely yours
Carlotta J. Maury [signed]

"P.S. I have not retained for myself a single specimen of all the various collections I have studied. Everything in my power to give, I gave to the University." [All emphases in the original.][54]

Two additional letters from this controversy bring it almost to a close. The first is from Maury to Farrand on December 28 and then his reply on the 29:

"My dear President Farrand:—

"As under the present circumstances it is not possible for me to complete here a paleontological report I am engaged on for the Brazilian Government, I would like to return soon to New York. But, having made a protest against unfair discrimination, I am ready to stand by, if it seems best to do so.

"Should you desire it, I would be glad to answer any question you might wish to ask me. And I enclose a memorandum of my principal monographs and memoirs and collections.

"Since there are in the Geological Department a great quantity of Venezuelan fossils belonging to the Standard [Oil Company] and affiliated Companies, it is difficult to explain the feverish desire manifested to obtain the few I held in trust, except in one way. Fossils from our highly productive wells would be illuminating for comparison with those from experimental drillings. They might be very helpful in the selection of land tobe [*sic*] leased for oil exploitation, in the same neighborhood.

"Whatever the motive, two facts remain:- the 48 hour ultimatum and the $100. a month, retroactive, private charge for use of University property.

"Most vital to me is the question whether I am to be debarred from all future privilege of studying in the Geological Department, and even of making comparisons with my own collections and types therein deposited.

"Very sincerely yours
Carlotta Maury [signed]"

The following memorandum accompanied the above letter.

"COLLECTIONS DEPOSITED IN THE GEOLOGICAL DEPARTMENT BY C. J. MAURY

"Freshwater Mollusca Central and Western New York. Cayuga Lake Basin Interglacial Mollusca.[55]
French and Belgian, Oligocene, Miocene and Pliocene Fossils.
Trinidad Eocene, and Venezuelan Cretaceous Fossils.
South African, Permian, *Glossopteris* flora.
Pondoland Cretaceous Fossils.
Port Elizabeth Tertiary Fossils.
Dominican Republic Miocene Fossils. A large and beautiful collection obtained by my own expedition.
Brazilian, artificial casts of types, returned to Rio de Janeiro.
(For further detail ask Professor Ries, Head of the Department)

PRINCIPAL MEMOIRS PUBLISHED BY C. J. MAURY

"*Paleontology of Trinidad Island. Chiefly Eocene.* Jour. Acad. Nat. Sci. Phila., 1912.
Santo Domingo Type Sections and Fossils. Bull. Amer. Paleont. Nos. 29 and 30, 1917.
Tertiary Fossils Porto Rico. Ann. New York Acad. Sci., Scientific Surver Porto Rico & Vol. 3 Pt. 1, 1920

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[54] Carlotta J. Maury to Livingston Farrand, December 18, 1926. Livingston Farrand Papers, 3/5/7, Box 20, File 20-51. RMC-KL, Cornell.

[55] This was the material from the Fernbank site on the western shore of the lake; see page 91.

> *Paleontology of Trinidad Island.Miocene.* Bull. Amer. Paleont. No. 42, 1925.
>
> *Tertiary and Cretaceous Fossils of Brazil.* (*Fosseis Teriarios do* Brasil &) Servico Geologico do Brasil, Monographia 4, 1924–25.
>
> Also an annotated Catalogue of the Mollusca of the Gulf of Mexico, and many minor articles on correlation, new species, new formations, &, in Science,; Amer. Jour. Sci.; Nautilus; Jour. Geology.
>
> (All these are deposited in the main University Library)." [All emphases in the original.][56]

Farrand's reply:

> "My dear Miss Maury:
>
> "I have your letter of yesterday and am not as yet in a position to make any positive statement. I am quietly gathering such information as I can as to the situation in general and have no doubt in due time a satisfactory mode of procedure in the laboratory will be worked out.
>
> "Under these circumstances, I see no reason why you should remain in Ithaca, for I think I have before me the essential facts from you which would be significant. As to the notice to remove your property, I believe that is not a question of immediate embarrassment, and as to a monthly charge for the use of University property, that if made at all, should be worked out on a basis applicable to all such users.
>
> "As to your own future relation to the Department, I can make no statement because that is obviously a personal situation. I know of no institutional reason why the same privileges should not be extended to you as to any other graduate or inquirer but I know of no way to remove mutual personal prejudices.
>
> "In conclusion I can only say that I trust a working basis will be arrived at after further consideration.
>
> "Sincerely yours,
> Livingston Farrand"[57]

Maury wrote one last letter to Farrand before departing from Ithaca:

> "Before leaving I would like to thank you for your letter, and to express appreciation of the desire of justice to all that you have shown. I am very glad you intend to place research work of industrial concerns at the University on an equitable basis. The University should have a proper return, but I think a Company should not be required to surrender materials potentially of great commercial value.
>
> "I am not an economic geologist. The Caribbean Company has thirty-eight oil geologists working in the Maracaibo field. They look on me as a scholar in pure paleontology and stratigraphy, and I am glad that they have this confidence in me. It's going to be hard to do the work away from the University, but I shall manage somehow.
>
> "I should be very sorry to have you think that I came knowing I was unwelcome. Had I known, I should not have come. Professor Harris was writing to my company without my knowledge. I returned, as I supposed, on the old friendly basis, I wrote, called on arriving, and asked at his office if I might have a table. He seemed very pleasant. Ten days before the eviction I was invited to dine at his house and all seemed kindly.
>
> "Yet I lost trust in his sincerity.
>
> "I am glad I have had no altercation with Professor Harris. When he saw me replacing books and trays, he said: [Harris] 'What, you aren't going are you?' [Maury] 'Of course. You do not suppose I would remain under these conditions!' [Harris] 'What is going on? I can't make it all out. I seem to be Nobody!' [Maury] 'A great deal of injustice is going on!' [Harris] 'Come and tell me about it.' [Maury] 'I do not wish to discuss it.' That was all.
>
> "I could not do otherwise than protect the materials and interests entrusted to me, and it seems right to me to have protested against injustice and attempted betrayal. I do not think it will be of any help to me, but it may prevent the reoccurrence of such an incident which is very unfortunate for those involved, and injurious to the reputation of the University. Conditions of commercial research in the Geological Department, being upon no established basis, now almost invite attempts to wrest valuable facts or materials from seemingly weaker rivals.
>
> "Yet I am more sorry than I can say that this has taken place. For Ithaca can never seem the same. I may never return, But my affection of the University, though saddened, remains otherwise unchanged."[58]

There was, however, a change in her affection for the University. Almost exactly a year later, December 16, 1927, Farrand received the following:

> "Dear President Farrand:
>
> "Lately a representative of the Cornell Alumni fund called. In reply to the request for money I said that I had just cancelled my long-standing legacy to the University. It was my purpose to double instead of cancelling this gift. But after waiting a year and receiving no reply to my protest regarding Professor Harris' very unscrupulous action I conclude that you condone it.
>
> "He is an old man,[59] and was my highly esteemed Professor and friend. I wished him no harm but thought he should be restrained from trampling on others.

---

[56] Letter and memorandum from Carlotta J. Maury to Livingston Farrand, President, Cornell University, December 28, 1926. Livingston Farrand Papers, 3/4/7, Box 20, File 20-51. A copy of the letter only is in the Heinrich Ries Papers, 14/15/691, File 1-23. RMC-KL, Cornell

[57] Livingston Farrand to Carlotta J. Maury, December 29, 1926. Livingston Farrand Papers, 3/4/7, Box 20, File 20-51; additional copy in the Heinrich Ries Papers, 14/15/691, File 1-23. RMC-KL, Cornell.

[58] Carlotta J. Maury to Livingston Farrand, January 4, 1927. Livingston Farrand Papers, 3/5/7, Box 20, File 20-51. RMC-KL, Cornell.

[59] Harris was 62 on October 2, 1926.

> "Although I told the Alumni representative to say nothing, perhaps after all you should know that this matter has cost the University a loss of twenty thousand dollars.
>
> "Sincerely yours,
> "Carlotta J. Maury [signed][60]

Farrand made an attempt to smooth the situation, but to no avail:

> "I have your letter of December 16th. Naturally I regret the situation which arose between Professor Harris and yourself a year ago and which I made every effort to clarify. As I told you at the time, there can be no institutional discrimination of any kind. Personal differences are unfortunately beyond administrative control and in the last analysis such differences seemed to form the crux of the situation at that time. I feel sure that Professor Harris is willing to conform to any general procedures which may be deemed equitable and wise. I am, of course, very sorry that you do not think you can work out with him the personal difficulty which arose between you but after repeated conferences I could not see a definite admissible step which would insure satisfaction to you and all concerned.
>
> "Sincerely yours"[61]

A few months later Farrand received what appears to the last word from Maury and he forwarded a copy to Ries:

> "Dear President Farrand:
>
> "The exposure of the corruption of the Sinclair-Standard methods may open your eyes to the truth of the situation in the paleontological department when I appealed in vain to you for fair play.
>
> "Mr Sinclair has been Professor Harris' hero for many years, unhappily replacing his admiration for the great men of the intellectual world. The Sinclair methods are the ideals of the paleontological department. The same deceit, and falseness, and fraud, is there, The 'oil smudge' is not only on the Republican party[62]. It is also Academic. Hence I sadly withdrew my allegiance from Cornell. Not from personal resentment.
>
> "Sincerely yours
> "Carlotta J. Maury"[63]

Farrand wrote to Ries:

> "Dear Professor Ries:
>
> "For your personal information and not for quotation in any way I enclose a copy of a letter just received from Dr. Maury. Is there anything at all in her charge? Don't take this up with Professor Harris, as I see no reason for re-opening that matter unless you think it advisable to do so.
>
> "Sincerely yours
> [Signed] Livingston Farrand[64]

The bequest had been withdrawn and now her "allegiance" was withdrawn as well. As a result of what she felt was a breach of professional ethics, she severed all ties with Cornell and with Harris. This situation apparently was not a total secret, for many years later in a set of typed notes Ries left the final word with regard to Carlotta Maury, Harris, and Cornell:

> "Miss Maury had in her will left an appreciable sum of money to Cornell for visiting lecturers in Geology. She canceled this bequest after the episode . . ."[65]

As mentioned earlier, by the time the Maury incident occurred, Harris had been working for several years as a consultant for various oil companies. Why he appears to have stepped beyond the bounds of propriety in this one case is not clear. Perhaps he was struck with a touch of avarice, for the oil companies apparently were paying him quite well and he saw an opportunity to raise his standing with his company, and concomitantly his salary. Perhaps the mixture of commercial and scientific activities that were being conducted in his laboratory at that time blurred the distinction between them in his mind. Was it a case of his temper taking control of his actions? If so, what made him angry? He left no record of his motivation, but Carlotta J. Maury left little doubt as to her feelings.

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[60] Carlotta J. Maury to Livingston Farrand, December 16, 1927. Livingston Farrand Papers, 3/5/7, Box 20, File 20-51. RMC-KL, Cornell.

[61] Carbon copy of a letter from Livingston Farrand to Carlotta J. Maury, December 22, 1927. Livingston Farrand Papers, 3/5/7, Box 20, File 20-51. RMC-KL, Cornell.

[62] Maury was probably referring to the scandals involving the leasing of Naval Oil Reserve land which rocked the political world in the 1920s. In 1922 President Harding's Secretary of the Interior, A. B. Fall, allowed Harry Sinclair to lease Tea Pot Dome (Wyoming) area and Edward Doheny (Pan-American Oil) to lease the Elk Hills (California) area without any competitive bidding in return for sizable "contributions." Although Fall was convicted of accepting a bribe and went to prison, both Sinclair and Doheny were acquitted. Sinclair did go to prison for contempt of court for refusing to answer questions and attempting to influence a jury (Allen, 1931). Details of the scandal would have been in the headlines in 1927–28.

[63] Carlotta J. Maury to Livingston Farrand, President, Cornell University, March 19, 1928. Original letter is in the Livingston Farrand Papers, 3/5/7, Box 20, File 20-51. A typed copy is in the Heinrich Ries Papers, 14/15/691. RMC-KL, Cornell.

[64] Livingston Farrand to Heinrich Ries, March 20, 1928. Heinrich Ries Papers, 14/15/691. RMC-KL, Cornell.

[65] Un-signed notes prepared by Heinrich Ries (uses the phrase, "..after I became head,. . ."). Based on a note attached to another draft in the file, these were prepared in 1944 for Charles Nevin who was then head of the department. In the Ries papers are several versions of these notes and each set differ but slightly in content. Heinrich Ries papers, 14/15/691, Box 3, File 3-2. RMC-KL, Cornell.

Based on the many letters and memos which Harris wrote to Ries and the other department heads, some of which have been quoted in a previous section, his difficulty with Maury seems to fit into a pattern of defensiveness and self-preservation. Some of this defensiveness is apparent in his letters to Maury. Harris does not refer to her as "Dr. Maury", the title she is given in some of the company correspondence and one that he had used for her in previous years, even though she received her Ph.D. under his direction. Perhaps this is related to the fact that he never received an earned doctorate himself, but was surrounded by colleagues who had, and he felt he had to "prove" himself in their eyes.

Certainly the most profound result to arise from the Maury episode seems to have been the Paleontological Research Institution, which Harris founded six years later. In the "apology" letter to the University President, Harris used the phrase, ". . . I can build some roomy apartment, off the University property . . ." This appears to be the first hint, at least in print, of what later developed into the Paleontological Research Institution, a private entity totally divorced from Cornell. In this way, he was able, at last, to gain control over his collections without the interference of University officials. Harris' bitterness towards Cornell only deepened as the years went by, and was perpetuated by his daughter long after his death. In her will, Rebecca Harris indicated that the $50,000 she left to PRI was to be donated to other charities if PRI ever "merges" with Cornell. This same feeling evidently translated into the feelings of Harris' successor and protegé, Katherine Palmer. Responding to questions from the National Science Foundation in December of 1961 as to current or future plans for any formal connection with Cornell, Palmer stated:

> "The Institution has no formal connection with Cornell University nor does it plan to establish any such connection in the foreseeable future. . . . The Institution cooperates with Cornell University as with other institutions; to maintain much the same relationship as exists between the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, American Philosophical Society or other similar institutions in the same area."[66]

The fact that this was written 29 years after the laying of the PRI corner stone and almost 10 years after Harris' death gives some indication of the depth of animosity that existed between Harris, his family, and those who followed him at PRI and Cornell. Not until the 1990s was PRI to have any significant connection with Cornell.

It also appears that the situation between Harris and Maury foreshadowed the current difficulties of deciding where university research ends and private company enterprise begins that exist within many universities today, especially with regard to molecular biology and pharmaceutical research. Now, however, faculty at many institutions are required to sign annual "Conflict of Interest" and "Disclosure Statement" forms declaring participation and/or ownership of any commercial venture even remotely related to their university teaching and research.[67] In this way the university seeks to protect itself, or at least gain prior knowledge of any potential difficulty, and situations like the Harris-Maury conflict should not arise.

There is an old saying that time heals most wounds, and to some extent, this seems to be applicable for Harris, and perhaps for Maury as well. On December 30, 1936, just over two years before Maury's death, in his address as retiring President of the Paleontological Society, Harris presented a history of Cenozoic paleontology (Harris, 1937b). In several places in his address, Harris acknowledged Maury's work and its importance to paleontology, *e.g.*:

> "C. A. White's mistakes in assigning all his fossil material on the northeast coast of Brazil to the Cretaceous were corrected in Maury's large memoir, published by the Brazilian government in 1924[68]." (Harris, 1937b, p. 456)

Perhaps this recognition by her former mentor and protagonist brought comfort to Maury before she died, and may have served to partially remove the deep bitterness resulting from their estrangement. Maury died at her home in Yonkers, New York, on January 3, 1938, after a year-long illness. She was only a few days shy of her 64th birthday.

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[66] "Information in reply to questions" sent to the National Science Foundation, December 6, 1961. PRI Archives, Ithaca, NY.

[67] This is the situation for the University of Pittsburgh.

[68] C. J. Maury (1924).

CHAPTER 8. CORNELL COLLEAGUES

Harris came into a difficult situation when he returned to Cornell in 1894. He and Adam C. Gill, the mineralogist, joined Ralph S. Tarr in a department that had been running with temporary appointments and graduate students for almost two years. Even with the additional faculty, Tarr was still required to teach economic geology, which was not to his wishes, and he continued to request another person. According to notes left by Heinrich Ries, later Head of the Department:

> "Pres. Schurman apparently agreed to this [hiring another geology faculty] reluctantly, but told him [Tarr] that if he appointed one the man need never expect to be promoted to a higher rank[1]. . . . Tarr was hoping to get a Harvard man as that was his Alma Mater. I heard of the position accidentally and applied. Gill subsequently told me that Tarr could not very well refuse me with my record and experience"[2]

Thus in 1898, the situation was further complicated by the arrival of Heinrich Ries[3], an economic geologist, who apparently was not Tarr's first choice. Eventually Ries split from Tarr and by 1902 each of the four was conducting business as a separate entity, and each communicated with the others formally on his own separate letterhead. In essence, there was no "Department of Geology" during this time. Even the University acknowledged that this arrangement had been in effect for many years in a committee report to the Board of Trustees in 1906:

> ". . . the Department was conducted by three independent heads; Professor Tarr having charge of dynamic geology and physical geography, Assistant Professor Gill having charge of mineralogy and petrography. and Assistant Professor Harris having charge of paleontology. Dr. Ries, who came as instructor to assist Professor Tarr, was in due time promoted to an assistant professorship with special charge of economic geology."[4]

For almost 10 years these four people, Harris (paleontology), Gill (mineralogy and petrography), Ries (Economic Geology), and Tarr (Dynamic Geology and Physical Geography) ran their respective sections, all in McGraw Hall, but acting as if they were virtually on separate planets. Although not many department records survive from this period, apparently each person was sending the university president a separate annual report each year.[5] This was the climate in which Harris interacted with his colleagues.

ADAM C. GILL

As might have been expected, Harris and Gill became close friends, and that friendship endured until Gill's death only five months after his retirement from Cornell in 1932. When the Harris' lived on Eddy Street in Ithaca, Gill, a bachelor at the time, was a frequent visitor. Harris prepared the professional memorial for Gill which appeared in the *Bulletin of the Geological Society of America* in 1933 and he recalled his friendship with Gill:

> "Early in 1894 Cornell University decided to broaden its work in earth sciences, and in the place of the former professorship in geology, have, at first, three assistant professorships, which were assigned as follows: Mineralogy, A. C. Gill; Physical Geography and Dynamic Geology, R. S. Tarr; Paleontology, G. D. Harris. It was then that the writer became acquainted with Professor Gill, and from that time until the day of his death our relations as colleagues and neighbors were most intimate and most cordial." (Harris, 1933, p. 326)

The Gill residence was on Wycoff Avenue, not far from where Harris built a home on Kelvin Place, and both shared a love of flowers which grew profusely in their back gardens. No doubt the two men walked together across the bridges over Fall Creek gorge countless times as they went to and from McGraw Hall. Perhaps because of this, there is, unfortunately, little record of their friendship aside from the Gill memorial.

RALPH STOCKMAN TARR

There is a similarly sparse record of the Harris-Tarr relationship, but apparently there was little love lost between them. As noted earlier, the University administration did not include Tarr in the decision to hire Gill and Harris, even though he had repeatedly requested additional assistance. When they were hired, Harris and Gill were afforded the same rank as Tarr, even though Tarr had been there for almost two years operating as a defacto department head. No doubt Tarr had some feeling of betrayal; this was probably not the kind of reward he expected after all his hard work to keep the Department functioning after the departure of H. S. Williams. His only advantage, and he may not have even known this, was that he was paid a higher salary than Gill or Harris, for they each received $1400 while he was paid $1700.[6] Add to this situation the fact that the University administration did not make an official designation for a department head when the faculty was enlarged. On the contrary, Harris came to Cornell armed with a letter from the President, quoted earlier, which stated that each person was to be independent of the other. All in all there was very little here to create a condition of cooperation and friendliness, at least between the two new faculty members and Tarr.

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[1] This turned out not to be true, for Ries was promoted to Assistant Professor in 1902 and Professor in 1906 (A. L. Anderson, 1952).

[2] Page 2 of typed, undated and unsigned notes. Because of the use of "I" and "me" in the narrative, these must have been written by Ries and based upon an attached note, they were prepared about 1944 for Charles Nevin, then head of the Department. Heinrich Ries Papers, 14/15/691, Box 3, File 3-2. RMC-KL, Cornell.

[3] Heinrich Ries appointed Instructor in Economic Geology for 1898–99, at a salary of $750; Cornell University Board of Trustees meeting minutes, April 12, 1898.

[4] Report on the state of the Geology Department and another related item, promotion of Heinrich Ries, presented to the Cornell University Board of Trustees by S. D. Halliday, R. H. Treman, and J. G. Schurman. Trustee meeting minutes, May 15, 1906.

[5] There are copies of Harris' reports for 1899–1900 and for 1900–1901; each printed with his own letterhead. HA-PRI, Ithaca, NY.

Ries described the situation between Harris and Tarr this way:

> "Tarr had not introduced me to Harris at all. I knew him by sight, so one day walking home to lunch I overtook him and introduced myself. Told him I was to teach Economic Geology. Said he was glad to hear it as the way it had been taught was execrable [*sic*]. (Tarr had been teaching it.) [Parenthetical in original.][7]

HEINRICH RIES

The only person to keep much a record of daily interaction with Harris during these years was Ries, who joined the faculty only four years after Harris and was head of the Department for almost 30 years. As the administrative officer, like Williams before him, it is expected that he would keep good records. The Departmental records of Williams and Ries, along with their personal notes, form the basis for much of what follows.

From the tone of the communications between Ries and Harris, it is clear that they simply did not get along well[8]. According to Harris' former student, Druid Wilson, when H. S. Williams retired in 1914, Harris expected to be named head of the department, but, instead, the position went to Ries. Also, Wilson, who knew both men, felt that Ries ". . . never gave Harris his due."[9] In defense of Ries, a department head often must hold a different view of things than the average professor, on matters such as operating costs and enrollments. From the existing records, it seems Harris' portion of the Department was very costly to run due to the small class sizes. As examples, the following are taken from Annual Reports Ries prepared for 1914–1915 and 1919–1920:[10]

1914–1915	Cost per Student-hour	
Class	1st Term	2nd Term
Elem & Econ. Geol	$ 2.77	$ 3.02
Physical Geography	5.40	6.08
Mineral—Petrology	10.50	8.70
Paleo & Strat. Geol	35.00	23.20
Dept. Average	4.30	5.00

1919–1920	Number of Students		Cost/Student-hour	
Class	1st Term	2nd Term	1st Term	2nd Term
Elem. Geology	287	301	$ 3.20	$ 3.25
Phys. Geography	155	73	4.30	8.75
Min—Petrology	73	80	12.00	13.00
Historic—Paleo	14	30	41.00	19.00
Economic Geol	151	152	4.10	4.50

A check of several other Annual Reports shows that, in general, Harris' classes had lower enrollments than any of his colleagues. As Ries had to answer to the University administration each year on these costs, no doubt this affected his personal relationship with Harris. Ries was not the only one to note the low enrollments in Harris' classes and the fact that for many years Harris was on campus only part of the regular academic year. As mentioned previously, in 1915 President Schurman inquired as to whether Harris was even needed full time or not[11].

Apparently Harris had little to do with the academic advising of undergraduates, a task that is vital to any department. Ries commented in a letter to Henry Leighton[12] that everyone in the Department had taken their share of undergraduate advising, almost everyone that is; "At present only Professor Harris, I believe, has never done so."[13] Certainly this would not have endeared Harris to his colleagues, all of whom were doing not only their share of the undergraduate advising, but his share as well.

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[6] Cornell University Trustees meeting minutes, January 9, 1894. RMC-KL, Cornell.

[7] "Notes on past conditions in Geology Department" Set of typed notes by Ries complied for Charles Nevin c. May 1944. Heinrich Ries Papers, 14/15/691, Box 3, File 3-2. RMC-KL, Cornell.

[8] This was confirmed by Dr. Lois (Schoonover) Kent. Personal communication, September 9, 1995.

[9] Personal communication, July 12, 1995.

[10] Annual Reports for 1914–1915, Box 2, File 2-1; 1919–1920, Box 1, File 1-85. Heinrich Ries Papers, 14/15/691, RMC-KL, Cornell.

[11] Jacob Schurman to Heinrich Ries, May 28, 1915. Heinrich Ries Papers, 14/15/691, Box 1, File 1-22. RMC-KL, Cornell.

[12] Henry Leighton (A.B.'06) worked for the Pennsylvania Geological Survey and was Professor of Geology at the University of Pittsburgh where John Wells was one of his students. It was Leighton who encouraged Wells to come to Cornell (Brice *et al.*, 1995).

Yet, regardless of the personal feelings, Ries defended Harris' portion of the Department and tried to maintain and increase financial support for paleontology. For example, in 1920–21, even though Harris had only 17 students in the first term, Ries filed this request with the President:

> "Professor Harris urges the need of a museum in which he can display his extensive collection of Tertiary fossils."

In another report by Ries:

> "The collections which he [Harris] has crowded on the top floor [of McGraw Hall], can probably not be duplicated anywhere in this country, and are of great value for students interested in his particular field."[14]

While Ries did show some sympathy for Harris' situation with regard to the need for collection space, he told Harris that McGraw Hall simply did not have any extra room. Ries, however, was not totally sympathetic to the request, and he continued:

> "Indeed I question whether the many type specimens of Tertiary fossils which he has, and which are of interest chiefly to a few graduates taking special work in that line, could not equally well be preserved for study in special cases of drawers."[15]

As is often the case, the professor can be the dreamer, but the department head must deal with realities:

> "Professor Harris wants to see vertebrate paleontology developed, but to do this would entail more expense as to equipment and space, . . . The number of students taking it would probably be very small, and it is my [Ries] personal opinion that is should hardly be attempted until we have plenty of money and space. He [Harris] likewise expresses a desire to have an instructor in Paleozoic Paleontology."[16]

In some of his private correspondence, Ries was less than complimentary even about Harris' research:

> ". . . Harris has I think the most cheerful habit of writing up every little bit of work he does as if no one else had ever been in the region, . . ."[17]

How much the conflict between Harris, the professor, and Ries, the department head, colored their personal relationship is very difficult to tell, but, based upon the surviving documents, it appears the personal side was as contentious as the professional. From what Ries wrote in a letter to the President in 1929, some jealousy existed over some of Harris' advantages. Note Ries' ability to both praise and damn in the same sentence:

> "I am returning herewith the letter which you received from Mr. K. E. Schmidt[18] regarding the establishment of a publication fund to assist Professor Harris with his publications. I may say that Professor Harris has for a number of years published at his initial expense the bulletins [*sic*] of American Paleontology and the Paleontographica [*sic*] Americana. The articles which have appeared in these are mostly papers on Paleontology by himself and his own students[19] and contain much valuable material. These have never been for free distribution but have been sold by him. It would of course be very nice if we can have a publication fund for the Department but I think that the rest of the Department might feel of course that if such a fund were established that the other branches should share in it. This other side of the matter is one which Mr. Schmidt knows probably nothing about as I find in looking up his record that he took 25 hours of work under Professor Harris and was not registered for an hour in any other branch of the Department. By publishing the paleontological papers himself Professor Harris is of course able to publish them in full with many illustrations while the rest of us have to be content with sending our papers and those of our students to the scientific journals in which they must necessarily appear in very much condensed form."[20]

Such was their relationship for over 50 years.

HENRY SHALER WILLIAMS

For Harris, and perhaps others, one of the saddest situations within the Department was the deterioration of the relationship between himself and H. S. Williams, his former professor and often strong supporter. Certainly they maintained a strong friendship in the early days, for very soon after receiving his appointment to

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[13] Heinrich Ries to Henry Leighton, October 21, 1926. Heinrich Ries Papers, 14/15/691, Box 2, File 2-3. RMC-KL, Cornell.

[14] *Annual Report for 1924–1925* by Heinrich Ries submitted to Dean R. M. Ogden, May 7, 1925, p. 3. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[15] *Annual Report for 1920–21*; N.D. Heinrich Ries Papers, 14/15/691, Box 1, File 1-85. RMC-KL, Cornell.

[16] *Annual Report for 1925–1926* by Heinrich Ries submitted to Dean R. M. Ogden, N.D.,p. 3. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[17] Heinrich Ries to H. P. Cushing, March 10, 1906. Heinrich Ries Papers, 14/15/691, Box 1, File 1-84. RMC-KL, Cornell.

[18] "Hans" Schmidt who was on the two *Ecphora* excursions in 1914 and 1915.

[19] About 70% of the papers in the first 100 issues of the *Bulletins* and all but one of the first 13 issues of *Palæontographica* were by Harris or his students.

[20] Heinrich Ries to Livingston Farrand, April 12, 1929. Heinrich Ries Papers, 14/15/691, Box 2, File 2-7. RMC-KL, Cornell.

Cornell in 1894, Harris wrote to Williams, who was then at Yale:

> "Having now received the appointment myself I shall spare no time and means to put invertebrate paleontology at Cornell on the best footing possible, i.e., within my power."[21]

It was not until Williams returned to Cornell that the two men became disenchanted with one another.

In 1904, H. S. Williams left Yale and returned to Cornell to assume the duties as head of the Geology Department, but with a concurrent half-time appointment with the U.S.G.S.[22] Part of Williams' duties for the University also included overseeing the museum which was housed in McGraw Hall.

During his stay at Yale Williams had apparently kept in touch with Harris, and shortly before his return to Cornell Williams wrote to him about a project:

> ". . . to map the Paleozoic rocks of the Ithaca Quadrangle this year. And if nothing arises to hinder [Edward M.] Kindle and I will be at work in the neighborhood during the summer."[23]

Williams asked Harris for recommendations for a field assistant who would have the highest potential. He also indicated that at least part of the collections resulting from this study would stay at Cornell. In this letter, however, Williams gave no hint that he was contemplating a return to Cornell, and indeed, there seems to have been little consultation by Williams or the University administration with any of the geology faculty about his return to the campus.

Of all the faculty, Harris appears, at first, to have been the most supportive of Williams. J. C. Branner wrote to Harris at the time Williams returned to Cornell:

> "In regard to Wms [*sic*] and Cornell: I find that Tarr has been trying to kick up a great dust about it, and that he has written to people outside of the University that he is so put out that he is disgusted almost or quite to the point of resignation. Of course such views should be expressed only to the President.
>
> "I am very glad that you told W. that you would frankly cooperate in building up a museum and in strengthening the graduate work. W. thinks highly of you, and of course nothing is to be gained by being cantankerous. A head to the department will greatly strengthen geology all round at Cornell. It certainly will look better to the world outside. You are not to infer from this that I have had any finger in the pie. I never knew anything about it until I heard a rumor of it when I was in N. C. but I ought to tell you frankly that it seems to me on the whole an excellent thing, though of course it is none of my business except in so far as it affects my friends, and affects the study of geology."[24]

Williams' return, however, only made a bad situation worse. While Ries' notes are admittedly not the most unbiased source, they are among the few surviving records of these times:

> "Williams was a mild mannered and kindly in his disposition, and if the others had been decent to him I feel sure he would have done a lot for them. Tarr was the most openly aggressive of the three, and did not hesitate to show his feelings."[25]

Things did seem to move smoothly for a while, at least on the surface. In his second Annual Report, Williams sounded optimistic:

> "There has been greater harmony and cooperation, together with the greatest freedom of the individual initiative consistent with good organization and best efficiency of the whole. . . .
>
> "The coordination and organization of the several individuals into a harmonious department, providing the best possible opportunity for students to perfect themselves in geological science as a whole, is the end toward which my chief energies are directed. My feeling is that this spirit is becoming more and more appreciated by my colleagues and is resulting in increasing regard for the general interests of the department."[26]

But the honeymoon did not last long, for Williams had a different philosophy for paleontology as a college subject than Harris did. This he outlined in a draft of his Annual Report for 1904–05:

> "My attitude toward the general policy of conducting the branch of work in Paleontology I will frankly state, 'Although it is my favorite branch of geological study my conviction is that it is of secondary importance as an elementary branch of university study; that it is a special field of investigation, of value to specialists as a preparation for professional work, but on account of the im-

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[21] Letter fragment, G. D. Harris to H. S. Williams, believed written before March 26, 1894. H. S. Williams Papers 14/15/728, Box 28. RMC-KL, Cornell.

[22] Williams was appointed Professor of Geology, Head of the Department and Director of the Museum, but only on half-time salary of $1750, plus $250 as department head and museum director, to become effective in 1904–05 academic year. Cornell University Board of Trustees meeting minutes, February 6, 1904. RMC-KL, Cornell.

[23] Henry S. Williams to G. D. Harris, May 30, 1903. HA-PRI, Ithaca, NY.

[24] J. C. Branner to G. D. Harris, March 24, 1904. HA-PRI, Ithaca, NY.

[25] Page 2 of a typed, undated and unsigned notes prepared by Ries about 1944 for Charles Nevin, then head of the department. Heinrich Ries Papers, 14/15/691, Box 3, File 3-2. RMC-KL, Cornell.

[26] Annual Report for 1905–1906 by H. S. Williams. H. S. Williams Papers, 14/15/728, Geological Correspondence Box. RMC-KL, Cornell.

> perfection of the materials presented for study it is inexpedient to allow students who are untrained in zoology and botany to specialize in the subject.' Further, I believe that to raise the study of paleontology from a mere examination of curiosities to the position of an exact science requires in the student a trained mind, in the first place, and, secondly, an immense amount of careful, systematic study. It is therefore my judgment that it is cruelty to encourage an ignorant freshman to play at study by allowing him to spend time at collecting and identifying fossils before he knows the elements of either zoology, botany, or geology, such as can be taught to beginners in the university. When, therefore, I discover that it is possible by the elective system for freshman to specialize in paleontology without either being trained to study and having no preparation in other sciences, I am disturbed and wish to disallow the practice."[27]

From this it is obvious that the teacher and his pupil had developed very different ideas since they had last shared a classroom, and the teacher was now once again in a position of control.

Harris *was* guilty of allowing his students to take few classes outside the area of paleontology. Ries commented on this in the quotation above concerning Karl Schmidt's letter and in a set of notes:

> "He [Harris] was interested in what he called bio-geology and saw no reason to make students in historic geology even take a course in elementary geology first."[28]

Certainly this was not the approach to paleontology recommended by Williams.

In yet another way teacher and pupil had moved apart. Williams did not consider the study of paleontology a suitable livelihood for most students:

> "He [Williams] considered the field of scientific paleontology to be limited in its possibilities for a livelihood, and consequently he never offered undue encouragement to prospective students to enter the work. To those who were bound to enter, however, he gave the best council and advice of which he was capable." (Weller, 1918, p. 700).

Meanwhile, Harris seemed to be doing just the opposite by having students work with him in the Louisiana Survey and with his extended boat excursions and field camp work. Harris, especially with his work with the Survey, demonstrated that the study of paleontology could provide a good living. The size of Harris' classes, however, did indicate that he was not bringing large numbers of students into paleontology.

In May of 1905, after a brief discussion that included a request for a pay raise for Ries, Williams wrote to President Schurman:

> "While speaking of this matter [pay raises], too, the case of Prof. Harris comes in. While I realize that Prof. Harris is a man of high merit as an investigator, as suggested in the conversation some time ago, there is the misfortune to him of having me as his colleague. I cannot recommend to the trustees to devote an excess of funds to the paleontological side of geology. Although I feel appreciative of Prof. Harris' ability I am not ready to urge increase of salary in that line, although I would like to see him appreciated and honored in such a way as the trustees can do. . . . He does not ask for a raise of salary at present as he has funds from the Louisiana Survey and from the U.S.G.S. sufficient to run his research work finely, and both of these outside [activities] helps detract from the amount of time he can give to the University."[29]

From this, it appears Williams was not happy with the half-time arrangement that Harris was working every year.

It was during this period that Harris came very close to leaving Cornell. In October of 1905, the beginning of Williams' second year back at Cornell, Harris began to make inquiries about a position at Louisiana State University (LSU), where most of the previous state geologists had been faculty members. In reply to his expression of interest, the LSU President responded:

> "I should like nothing better than to see a geological department established at this University, and to have you in charge of it. In fact, I have long had this step in mind, but it has never seemed practicable to carry it out. I am glad to find now that you are thinking along the same line, and that there is a possibility of our securing your services to build up such department here, and work in the state. . . . I should be glad for you to write me at once giving an outline of your plans for the organization of the geological work here, and state when you could begin the work as professor of geology at this University, whether it is your idea to remain here permanently or only temporarily, what salary you would wish, what sum would be needed to purchase the desired collections, and how you think your salary and your time should be divided between the University and the Experiment Stations [the State Bureau under which the Geological Survey operated]."[30]

Within days of receiving Boyd's letter, Harris must have written to J. C. Branner about his plans, for Branner offered this sage advice:

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[27] Draft of Annual Report for 1904–1905. H. S. Williams papers, 14/15/728. RMC-KL, Cornell.

[28] Typed notes prepared by Ries sometime between Harris' retirement in 1934 and the early 1940s. Heinrich Ries Papers, 1/4/15/691, Box 3, File 3-2, RMC-KL, Cornell.

[29] H. S. Williams to J. G. Schurman, May 12, 1905. H. S. Williams Papers, 14/15/728, Geological Correspondence Box. RMC-KL, Cornell.

[30] Thomas D. Boyd, President, Louisiana State University, to Gilbert D. Harris, October 2, 1905. HA-PRI, Ithaca, NY.

> "I can't tell you how sorry I am to get your letter of the 12th. There is no mistake about the fact that I have never in my life heard Williams say anything but good of you and your work. There is so much good scientific work to be done in this world that it seems to me a great pity that any one should spend his energies in personal controversies. The things you complain of are unworthy of your serious attention, and I cannot help thinking that you are being egged on by someone who is seeking to make a fool out of you by exaggerating the importance of a lot of very trivial matters.
>
> "None of the relations of life are just what we should like to have them; there is something to be put up with wherever we are and whoever our associates may be. Be patient, my dear fellow, and don't listen to the growler and the faultfinder. I hope to have better news from you next time."[31]

Part of Harris' disillusionment may have stemmed from the fact that by this time he had been at Cornell about 13 years, started his *Bulletins*, produced several Ph.D. students, amassed a large collection of fossils, and served with distinction as Geologist in Charge of the Louisiana Geological Survey, yet he had not been promoted to the rank of Professor (apparently there was no associate professor rank at that time). This, coupled with the return of Williams, certainly explains some of his frustrations. Harris was not alone, however, in trying to flee the department; it seems that all of them, except Gill, were threatening to resign in 1905 and 1906.

Williams wrote to all the geology faculty quoting from a letter from President Schurman:

> " 'I [the President] have received a letter from Professor Tarr in which he objects to the organization of the new course on practical geology and mineralogy which you have been contemplating for Engineers.
>
> " 'I have already notified you that Professor Tarr has informed me that he expects to leave Cornell University at the end of the next academic year. In view of that fact I suggest for your consideration the desirability of postponing for one year the establishment of the above mentioned course for Engineers.' "[32]

Harris carried his search for the position at LSU right to the point of being appointed:

> "I do not know whether the Secretary of the Board or I am most to blame for not sending you a formal notification of the action of our Board on the 10th ult., but to avoid mistakes, I will take the responsibility, and humbly beg your pardon for the delay. The Board elected you Professor of Geology, with the understanding that you will divide your time between the instruction of the University and the field work for the Experiment Stations, and that one half of your salary will be paid by the Experiment Stations and one half by the University. After conferring with Mr. Dodson as to the meaning of your letter October last, I have concluded to offer you a salary of $2500 per annum, your expenses, of course, to be paid while engaged in survey work for the Station. If I have misinterpreted your letter, please set me right at once. Please also let me know when you wish to begin the work in Louisiana, which term of our session you would prefer to spend in giving instruction at the University, and what courses of study you wish to offer. . . .
>
> "With kindest regards, and with much rejoicing over the prospect of having you with us permanently, . . ."[33]

Members of the department must have known Harris was actively seeking another position, for just as Harris was receiving the news that he had been appointed to the position at LSU, Williams was writing to Schurman expressing concern about Ries seeking another position, but showing little concern if Harris left:

> "The fact seems to be that he [Ries] is going right ahead seeking for another position, on the ground that he cannot get along with his present salary; believes he is worthy of a better salary; and receives from you no hope of a rise. . . .
>
> "My position has been very seriously attacked by men considering themselves to be friends of the University. I have endeavored to prevent harm to the university by giving no occasion for complaint on their part or those two members of the department who have openly sought to upset all the plans originating with me in the department. This policy has so far resulted in preventing these two men, messrs. Tarr and Harris from resigning. . . .
>
> "I think the Department would not be seriously weakened by the loss of the Assistant Professor of Paleontology, though he is a thoroughly able and energetic man in the line of paleontology he has cultivated. So that in considering the future of the department, I think it would not be inexpedient to make no reappointment at the termination of his term of office. . . . it will give less offense to Mr. Harris and his friends if the termination of his appointment be placed on the score of economy, rather than on any comparison with other needs of the department or with the merits of another member of the department. No doubt objections will be raised, whatever is done; but the criticism of the President and of his appointment of me over the department have come from both Mr. Harris and Mr. Tarr, and neither of them has as yet fully adapted the spirit of 'harmonious cooperation' which you indicated in your report as so essential to the . . . university. . . .
>
> "With the many matters in your mind you may not be

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[31] John C. Branner to G. D. Harris, October 18, 1905. HA-PRI, Ithaca, NY.

[32] Henry S. Williams to Professors Tarr, Harris, Gill, and Ries, March 23, 1905. HA-PRI, Ithaca, NY.

[33] Thomas D. Boyd, President, Louisiana State University, to G. D. Harris, June 2, 1906. HA-PRI, Ithaca, NY.

> able to realize the intensity of the strain at particular points of the institution, but I trust you will be able to give this matter sufficient thought to not allow the active departure of Mr. Ries from the University.
>
> "We must not lose our friends, while we are protecting ourselves from the attacks of our enemies."[34]

As it turned out none of them resigned. Ries received a raise and stayed:

> "After Pres. S. [Schurman] agreed to raise me, I withdrew my application out there [University of Michigan, at $2500/year].[35]

Instead of actually resigning, in 1906 Tarr took his portion of geology completely away from the Geology Department and created his own independent Department of Physical Geography[36], that was also housed in McGraw Hall. This arrangement remained until Tarr's death in 1912 when geology and geography were once again combined into a single department. Harris, too, apparently had second thoughts:

> "I [LSU President] very much doubt whether it would be well to make the temporary arrangement you suggest at this time. My idea when I asked the Board to elect you Professor of Geology here was to secure your whole time for the University and the Experiment Stations; but under all the circumstances I think you have acted wisely in not severing your connection with Cornell. This being the case, it now seems to me that it would be better for you to confine your work in Louisiana for the Stations just as you have been doing for the last number of years, and not to take up the work of teaching at the University until we can have a full personal conference about the courses of study to be offered."[37]

Even though he did not leave, it appears that Harris did not become a model member of the department, at least not according to his colleagues. Complaints continued to pour forth to Williams. Responding to Williams' request for him to teach introductory laboratory classes, Harris wrote:

> "Last spring I found the assistance in my branch of geology entirely inadequate for the large amount of work we were called upon to do. . . . I do not think it desirable or dignified for the professor who gives an elementary course to personally follow it up in the laboratory when cheaper help should do the work. I do not think such practice is customary."[38]

Still using letterhead paper with the heading "Cornell University" to one side and "Paleontology and Stratigraphic Geology, G. D. Harris" to the other, and no mention of the "Geology Department", Harris used quite a terse and sarcastic tone in some of his letters to Williams:

> "Memorandum relative to aims and needs of the Paleontological and Stratigraphical Division of the Geology Department of Cornell University, 1908.
>
> "The AIM of this division, section, or department at Cornell . . ."[Emphasis in the original.][39]

At one point Harris even addressed a letter as, "Prof. H. S. Williams, Dean, Geol. Dept., C. U."[40]

Despite this rancor, and perhaps unknown to Harris, Williams was requesting support from the University administration for his area of paleontology:

> "I think give more attention to development of Professor Harris's [*sic*] special line of work. One of the chief needs connected with such development is putting in order of the vast amount of collections pertaining to the Paleontology museum."[41]

In 1907, Harris had sought promotion to the rank of Professor by appeals directly to the University President, apparently not going through his department head. He received this reply:

> "The Trustees were not prepared to establish an additional full professorship in the geologicaldepartment [*sic*]. And the conferring of a title without the corresponding emolument was felt to be a dangerous precedent to establish.
>
> "All this simply means that the Trustees are unable to promote to higher positions many men who have rendered long, faithful, and meritorious service in their present position."[42]

Harris responded by saying that he had not asked for any additional salary, and further that he had agreed to never ask for a full year's pay. He went on:

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[34] H. S. Williams to J. G. Schurman, June 2, 1905. Attached note in Williams' hand says, "Personally discussed with him; letter not delivered." H. S. Williams papers, 14/15/728, Geological Correspondence Box. RMC-KL, Cornell.

[35] Heinrich Ries to H. S. Williams, July 22, 1906. Heinrich Ries Papers, 14/15/691, Box 1, File 1-75. RMC-KL, Cornell.

[36] Cornell University Board of Trustees meeting minutes, May 15, 1906. RMC-KL, Cornell.

[37] Thos. D. Boyd, President, Louisiana State University, to G. D. Harris, July 25, 1906. HA-PRI, Ithaca, NY.

[38] G. D. Harris to H. S. Williams, October 2, 1907. Heinrich Ries Papers, 14/15/691, Box 3, File 3-4. RMC-KL, Cornell.

[39] Memorandum, April 15, 1908. Heinrich Ries Papers, 14/15/691, Box 3, File 3-4. RMC-KL, Cornell.

[40] G. D. Harris to H. S. Williams, April 14, 1909. Heinrich Ries Papers, 14/15/691, Box 3, File 3-4. RMC-KL, Cornell.

[41] *Annual Report for 1908–1909* by H. S. Williams, April 28, 1909, p. 7. Heinrich Ries Papers, 14/15/691, Box 3, File 3-6. RMC-KL, Cornell.

[42] J. G. Schurman to G. D. Harris, May 31, 1907. Jacob Gould Schurman Papers, 3/4/6, Vol. 20, pg. 118. RMC-KL, Cornell.

> "Rumor has it that the Geological Department is already overmanned. This state of affairs has come about, if at all, by recent appointments over which the professor here concerned had no authority. He should not be made to suffer on account of the cost of new men."[43]

No doubt one of the "recent appointments" to which Harris referred was that of Williams three years earlier.

When it was to Harris' advantage, however, he was quite willing to cooperate with Williams. Just before he received his promotion and at about the time the funding for the Louisiana Survey had an uncertain future, Harris wrote to Williams from Louisiana:

> "Just now I am not bound by contract to anyone for the time mentioned. I thought perhaps as you have often expressed a desire for the arranging of General Geology under one man and as you have kindly suggested I would be the most fit for the work, would it not be well just now to suggest the matter to the President [of Cornell]. Naturally I should expect the beginning 'full' professor's salary, i.e., $2500 but since this would relieve Dr. Ries of so much work it would naturally give him the chance to dismiss one instructor. So the (1) cost would be no more to the University, (2) your idea would be finally carried out, (3) students would have more of two professors in place of an instructor. What objections can properly be made to these three points? Still, I am not thrusting myself anywhere. I simply suggest this now as it seems that I should know where I stand before agreeing to too much outside work."[44]

Williams must have interpreted this as a thinly veiled request for promotion, for he answered:

> "I have just received your letter this morning[45] and have taken it into the President and consulted him regarding the matter, and he says to tell you that there are several Departments in the University sadly needing more full professors, but that the Geological Department is not one of them, and he cannot recommend to the Trustees the appointment of another full professor in the Geological Department.
>
> "This, is seems to me, settles the question you raise. . . .
>
> "I still think it would be a desirable thing to have the General course in one man's hands, but the reply of the President seems to make this impossible, in the way at least, that you suggest it."[46]

Harris seemed to get the message loud and clear, but was, at the same time, saddened by the recommendations of the President:

> "Am very glad to hear the plain truth about the Geol. Dept. [*sic*] as seen by the President and shall naturally trim my sails accordingly. There are a whole lot of things I want to do here [Louisiana] in the next five years and according to present indications I shall have many more students down here at work than I ever had before. This I am willing to do and and [*sic*] teach 1/2 year at Cornell; but I am perfectly frank to say that in my judgment it would be no more than mere decency and of real advantage to all concerned to give me the rank as well as the pay (now given) of full professor while I am at the University. It would cost nothing (even in dignity) it seems to me to make the change. I wish there were some way of making the President give his reasons against the change. I have already agreed to swear off from all claims of permanency and to never ask increase in pay. There is some . . . [one behind this] . . . and the President isn't going to point him out."[47]

There is no way of knowing who Harris thought was standing in the way of his promotion, but given the past differences he had with Williams, it is not unreasonable to assume he felt Williams was that person.

Later, despite all their differences, Williams eventually was able to obtain Harris' promotion. Note Williams' use of the word "again" in the letter below. This evidently was not the first time he had attempted to gain Harris' promotion:

> "Recognizing the fact that peace of mind and good feeling are essential to the most effective work, I want to call attention to the unhappiness of my colleague Assistant Professor Harris because he is still rated an Assistant Professor. I believe his ability is widely recognized through out the country as a first class Geologist and Paleontologist and I believe he should be recognized as a full Professor. He devotes half of the year most earnestly and effectively to the work of the Geological department, and is a devoted loyal Cornellian. I therefore, again, (and urgently) recommend that some way may be found to give him the title of Professor of Paleontology."[48]

Harris was promoted to "Professor of Paleontology and Stratigraphic Geology (part time)" by action of the Board of Trustees on May 19, 1909.[49]

In this same letter Williams made another attempt to bring peace and harmony to the department. At this point, apparently in desperation, Williams did relinquish his control of the department with a suggestion to the President and Trustees that the department be run by a committee, "The Geology Conference."[50] This action tends to support Ries' assessment of Williams' personality mentioned earlier, and it shows that Williams was trying to get, and keep, the department running smoothly. The committee approach, however, did little to ease the situation.

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[43] Two page, printed (probably by Harris) legal-looking extract "Subject—Change of title with no change in compensation *Case of Assistant Professor Harris asking to have the word 'Assistant' dropped from his title*." N.D. HA-PRI, Ithaca, NY.

[44] G. D. Harris to H. S. williams, November 2. 1908. Heinrich Ries Papers, 14/15/691, Box 3, File 3-6. RMC-KL, Cornell.

[45] Note the two day mail service between Jennings, Louisiana and Ithaca, New York in 1908.

[46] H. S. Williams to G. D. Harris, November 5, 1908. Heinrich Ries Papers, 14/15/691, Box 3, File 3-6. RMC-KL, Cornell.

[47] G. D. Harris to H. S. Williams, November 7, 1908. Heinrich Ries Papers, 14/15/691, Box 3, File 3-6. RMC-KL, Cornell.

[48] H. S. Williams to J. G. Schurman, May 19, 1909. Heinrich Ries Papers, 14/15/691, Box 3, File 3-4. RMC-KL, Cornell.

[49] Cornell University Trustee Meeting Minutes for May 18–19, 1909. RMC-KL, Cornell.

This constant bickering between the Williams and Harris continued at various levels until Williams' final retirement in 1912, and even beyond. Williams had been granted some research space on the top floor of McGraw Hall, and Harris had eyes for some of the storage drawers located there; Ries had other ideas:

> "As for your room on the top floor; no one will be allowed in there. That is for *your private use*, as long as you want it. . . .
>
> "Harris as you know has the southwest room on the top floor. He wants to put a lot of drawers in racks along the east side of that room. It was for this purpose he suggested the possibility of getting the vacant racks in your room. . . .
>
> "I [Ries] told him [Harris] this morning that actually and proportionately he had more floor space now that any other branch of the department." [Emphasis in the original][51]

So, the relationship between Harris and Williams which began with warmth and mutual respect, ended with bitterness and distrust. The last few years of Williams' life were spent in Cuba, and he died in Havana in 1918 (Weller, 1918).

Even after Williams' death, however, Harris was not above appealing to the memory of his colleague to advance his own cause:

> ". . . there should be at once a move made to raise funds for an International Devonian Museum here, in the center of the best Devonian section in the World [*sic*]. This should be a shrine, as it were, to the memory of Professor H. S. Williams and should be financed by the Williams family. They have given little so far but I believe might take hold of such a proportion if properly approached. This naturally should be quite separate from the general paleontological museum."[52]

Many years later, Harris still did not acknowledge that his actions had any thing to do with the turmoil that existed during Williams' tenure as head of the department:

> "Professor H. S. Williams could have done wonders here [at Cornell] if he had managed a little differently financially and had gotten material to work on for Cornell, and not for the U. S. Geol. Survey."[53]

In defense of Harris, however, it can be said that while Williams came with high hopes for the department, his focus may have been a bit narrow. In his diary, written the first week of April 1904, Williams said:

> "I believe it may be truthfully said, that with the return of the Devonian laboratory of the U. S. Geological Survey to Cornell no other university will possess the facilities so well adapted for advanced research in regard to problems of evolution of Paleozoic life and their relation to historical geology and to the principles of correlation in the Paleozoic rocks as Cornell."[54]

Williams also wrote about the need for vertebrate paleontology, more exhibits, and certainly emphasized his own area of Paleozoic paleontology, but he said very little about Tertiary paleontology. Perhaps Williams was so focused on the old rocks he had little time for the younger ones and the people who did.

O. D. VON ENGELN

Harris and Oskar D. von Engeln may have had an amiable relationship. Von Engeln came to Cornell as a student in 1904 and was associated with the Department until his death in 1965; more than 60 years. Exactly how amiable the friendship was between Harris and von Engeln is difficult to say because "Von", as he was known, was a student and protegé of R. S. Tarr, and from what can be determined, Tarr and Harris did not get along very well. But according to Ries, Harris and von Engeln must have been friends:

> "There did not seem to be any use objecting [to appointing O. D. von Engeln an assistant professor] and I felt thatif [*sic*] I said anything against [the appointment] Harris would tattle it to O. D. [von Engeln]. . . ."[55]

Von Engeln had a home on Kelvin Place not far from Harris and Gill, and it would have been normal for him to join the others in walking from home to McGraw Hall. Perhaps photography provided von Engeln and Harris a mutual interest. Von Engeln was the photographer on several expeditions to Alaska with Tarr, and he took what may be one of the most famous photographs of the Cornell campus in the early Twentieth Century. Von Engeln sold copies of it under various names, "Rainy Day on Campus" and "In College Precincts" (Brice, 1989), and it appeared in magazines of the day (Von Engeln, 1907).[56] The photograph was the product of a serendipitous event, for he was just testing a camera in the rain before embarking on the 1906 expedition to Alaska[57]. He set up the camera outside McGraw Hall, and tripped the shutter just as two students walked by. He framed the pair as they walked in the rain under the stately elm trees that used to grace the Arts Quadrangle of Cornell.

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[50] The suggestion was approved by the Trustees; Cornell University Board of Trustees meeting minutes, May 19, 1909. For details, see the chapter "Period of Confusion" in Brice ,1989, p. 74–83.

[51] Heinrich Ries to H. S. Williams, December 12, 1914. Heinrich Ries Papers, 14/15/691, Box 1, File 1-76. RMC-KL, Cornell.

[52] G. D. Harris, Annual Report for Heinrich Ries, May 8, 1928. Heinrich Ries Papers, 14/15/691, Box 2, File 2-7. RMC-KL, Cornell.

[53] *Annual Report* by G. D. Harris to Heinrich Ries, May 8, 1928, p. 2. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[54] H. S. Williams' Diary and Course Book, p. 119. Heinrich Ries Papers, 14/15/691, Box 3, File 3-9. RMC-KL, Cornell.

[55] Typed note by Ries complied c. 1944 for Charles Nevin. Heinrich Ries Papers, 14/15/691, Box 3, File 3-2. RMC-KL, Cornell.

Both von Engeln and Harris believed in the power of illustrations, and in their teaching they used lantern slides, large 3″ × 4″ glass black and white positives which could be projected on to a screen (today replaced by the 35 mm color transparency). In their publications von Engeln used photographs of landscapes while Harris used photographs of fossils and outcrops. Perhaps this common interest overcame what differences might have existed with von Engeln's association with Tarr.

Von Engeln was one of the three people who prepared Harris' faculty memorial which stated, "Professor Harris did not cultivate wide social contacts." (Herrick *et al.*, 1953, p. 16A). Von Engeln evidently had fond memories of Harris, for he dedicated is 1961 book to "The Faculty Stalwarts: Tarr, Gill, Harris of the Good Old Days in the Geology Department of Cornell University" (von Engeln, 1961). Apparently, however, there was little social contact between the two, for in his *Reminiscences*,[58] a 214 page handwritten autobiography prepared when he was 83, von Engeln made almost no mention of Harris. The only reference to Harris appears in the section in which von Engeln was describing the situation when H. S. Williams returned to the department in 1904:

> "The return of Williams and elevation to head was most distasteful to all three, Tarr, Gill and Harris and later, 1914, [the] succession of Ries Williams's [*sic*] protege, was greatly resented by the survivors, Gill and Harris."[59]

Thus, even though they were colleagues in the same building for almost 50 years, that is all von Engeln had to say about Harris in the telling of his own life's story.

RETIREMENT

Harris retired from Cornell in 1934, after 40 years of association (Plate 13). To mark the occasion, the University Faculty and the Cornell Board of Trustees unanimously adopted the following resolution:

> "Gilbert Dennison Harris born at Jamestown, New York, October 2, 1864; graduated by Cornell University in June, 1886, with the degree of Ph.B.; assistant and associate professor[60] of Paleontology and Stratigraphic Geology at Cornell from 1894 to 1909; Professor of the same since 1909; retired as of October 2, 1934 [his 70th birthday].
>
> "Because of various preempting factors occurring in more general fields of geology, Professor Harris soon became interested in the belt of Tertiary rocks which occur all over that vast territory of the United States from Maryland to Texas. Thus, he early began to make intensive studies of the stratigraphy of the Tertiary and of the fossils lying at hand everywhere over that wide area. It was not long before he became known throughout the world as an authority on Tertiary Stratigraphy.
>
> "During the six years immediately following graduation, Professor Harris became successively a member of the Arkansas Geological Survey, of the United States Geological Survey, and of the Texas Geological Survey. Subsequently he was State Geologist[61] of Louisiana for ten years and for a time special lecturer in Paleontology and Stratigraphy at the University of Texas. Professor Harris and his students have described hundreds of species of fossils from the Tertiary of the southern United States, Central America, South America and Africa, and their studies have extended to southern England and northern France. As a result of these studies, hundreds of type specimens of fossils have accumulated which constitute a priceless and absolutely essential collection to all students of the Tertiary in the countries indicated.
>
> "He was one of the first to recognize the relationship existing between salt domes and commercial oil and gas fields and years ago made a special study of salt domes with the publication of several pioneer papers on the subject.
>
> "Professor Harris early recognized the necessity of a medium for the publication of the original descriptions of new forms and of the papers on stratigraphy by himself and students. He, therefore, established the Bulletins of American Paleontology for the more general papers and the Palaeontographica Americana for the monographic papers. These publications he has always printed on his own private press, has, indeed, set the type himself for many of them and formerly made the plates. This work, with the Bulletin now in its 22nd volume, and with many monographs of the Palaeontographica, has been truly prodi-

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[56] The photograph was on the cover of *The Interior*, Educational Number, v. 38, no. 1940, August 1, 1907.

[57] A photograph of von Engeln developing film in a glacial meltwater stream during the 1906 expedition was reprinted in *National Geographic*, v. 188, no. 2 (August), 1995, p. 130

[58] O. D. von Engeln Papers, 14/15/856, Box 1, File 1-45. RMC-KL, Cornell.

[59] O. D. von Engeln Papers, 14/15/856, Box 1, File 1-45, p. 136. RMC-KL, Cornell.

[60] This rank did not exist during that time period. There were two grades of assistant professor. Trustee minutes for May 18–19, 1909, state, "Assistant Professor G. D. Harris to be Professor of Paleontology and Stratagraphic [*sic*] Geology . . ."

[61] His official title was, "Geologist in Charge" (Pope, 1988).

> gious-difficult to understand how it has been possible for one man to do. Moreover, the plates of two publications have scarcely been equalled in quality and finish and are still considered the best in their field today.
>
> "In addition to his extensive labors here at Cornell and in Louisiana, he has been consulting geologist for the Trinidad Petroleum Development Company and Paleontologist to Standard Oil Company of Venezuela.
>
> "As a teacher, his courses have been rather specialized and technical for the undergraduate but no man anywhere has received greater admiration and unbounded loyalty from graduate students than has Professor Harris. His quiet, restrained, modest character, combined with his devotions to the interest of his students and to the ultimate fruition of their labor has inspired many of these men and women with a fervent zeal and lasting allegiance to him and to Cornell.
>
> "Professor Harris is now preparing with the greatest enthusiasm to carry on his work in paleontology and stratigraphy of the Tertiary. He has great collections available and properly housed. Several of his former graduate students are now at work with him and our best wishes are extended to him for many productive years of labor in his chosen field"[62]

This and a small reception at the Department organized by a Mr. J. M. Parker, 3rd[63] and given by the Department, Chi Upsilon, and Sigma Gamma Epsilon,[64] ended his formal connection with Cornell.

Harris did, however, maintain an office in McGraw hall for several years after retirement. A former student, who was at Cornell shortly after Harris retired, remembers seeing him carrying fossils and manuscripts back and forth everyday from home to the office. He was so afraid of a fire in McGraw Hall, that he would not leave important materials in his office.[65] Ries described the situation:

> "Professor Harris works over here [McGraw Hall] spasmodically. He retains his desk in the same place it has been for years, and all of his Tertiary (except for what he has taken away) is in the next room, . . . , Harris suffers no retrenchment."[66]

Harris was certainly leaving his mark on McGraw Hall, for about the time he was retiring, Ries informed him that the University officials were concerned about the load on the floors in McGraw Hall from the many drawers of rocks and fossils that were stored there.[67]

But two years earlier, Harris had already begun a project that was to remove him permanently from McGraw Hall and Cornell, and which would occupy him for the rest of his life, the Paleontological Research Institution.

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[62] Adopted at the Trustees meeting of February 2, 1935. Resolution was drafted by A. H. Wright, C. M. Nevin and Glenn W. Herrick. These names are on a copy of the resolution at HA-PRI, Ithaca, NY.

[63] The name is mentioned in a letter from George M. Martin to Heinrich Ries, October 6, 1934. Heinrich Ries Papers, 14/15/691, Box 1, File 1-25. RMC-KL, Cornell.

[64] This information comes from a small article, believed to be from the *Ithaca Journal*, but exact date and page are unknown, most probably in October, 1934. HA-PRI, Ithaca, NY.

[65] Lois Schoonover Kent, personal communication, September 8, 1995.

[66] Heinrich Ries to John L. Rich, April 8, 1935. Heinrich Ries Papers, 14/15/691, Box 1, File 1-24. RMC-KL, Cornell.

[67] Heinrich Ries to Gilbert D. Harris, October 15, 1934. Heinrich Ries Papers, 14/15/691, Box 1, File 1-23. RMC-KL, Cornell.

CHAPTER 9. "SOME ROOMY APARTMENT": POST-RETIREMENT AND THE PALEONTOLOGICAL RESEARCH INSTITUTION

The years after his retirement in 1934 were, as was normal for Harris, busy ones, as he continued to edit and publish his two journals. In fact one of the last known photographs of Harris, taken three years before his death, shows him bending over his printing press as he printed yet another issue (Plate 14). He continued to personally run the press until 1949, his 85th year, and number 134 of the *Bulletins*, when failing eyesight[1] forced him to relinquish his position as editor, printer, and publisher (Palmer 1953a, b). There was a delightful newspaper article by Carl B. Kaufmann entitled: "Professor Still Active At 85 In Field of Paleontology"[2] which was accompanied by the photograph of Harris and his printing press. In the article Kaufmann noted that although he was practically unknown "outside of science", Harris did not mind; it ". . . is of little concern . . ." to him. Further, Kaufmann brought out the fact that while the *Journal of Paleontology* was a ". . . subsidized, staff-prepared affair.", Harris' journal was a one-person operation. At that time, only three years before his death, he was running 600 copies of the *Bulletins* in a single press run.

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[1] "My eyes are rather going back on me but maybe they have a right to after 86 years." Original letter, Gilbert D. Harris to H. C. Kugler, June 15, 1951. HA-PRI, Ithaca, NY.

[2] *The Ithaca Journal*, Thursday Evening, November 3, 1949, p. 5.

In retirement there was time for more travel. For example, in November, 1935, with each person paying his or her own expenses and Harris providing the automobile transportation, Rousseau Flower, Katherine Palmer, and Harris took a trip through Tennessee, Louisiana, Mississippi, Alabama, and Florida visiting and collecting in over 31 localities (Palmer, 1982). Two years later, in 1937, Ralph Liddle (A.B.'18) and his wife Pearle took Harris by automobile across the U. S. to California and the West Coast on a collecting trip. The next year, with assistance from a grant from the Geological Society of America, Harris, Katherine Palmer, and her husband, E. L. Palmer, made an extended trip to examine the Gulf Coast from Florida to Arkansas. One highlight of this venture came with the discovery of an unexpected fossil. While examining some strata near Forrest City, Arkansas, Harris discovered a vertebra of a zeuglodont, *Basilosaurus cetoides* (Owen), which was part of the first known[3] remains of this extinct whale found that far north (30 degrees) (Palmer, 1939). In 1902, based on other fossils, Harris had assigned the Jackson units to the Eocene and *B. cetoides* confirmed the presence of these Jackson beds in the Forrest City area.

He finally found the time to complete the opus on the turrid gastropod illustrations, a project he had started almost a half century earlier (Harris, 1937a). He kept busy with other research publications (Harris, 1934b, 1940, 1951) and professional activities, serving as President of the Paleontological Society in 1936, and Vice President of the Geological Society of America in 1937. His address as the retiring President of the Paleontological Society provided him with an opportunity to outline the history of Cenozoic marine paleontology, to which he and his students had added many chapters (Harris, 1937b). In 1939, Harris was elected a "Correspondent of the Academy" by the members of The Academy of Natural Sciences of Philadelphia, one of the oldest scientific organizations in the United States, founded in 1812[4].

But on a personal side, these were lonely years for him. Two years before he retired, Harris suffered two irreplaceable losses. First Clara, his wife of almost 42 years and the mother of their only child, became ill in late 1931:

> "I have [*sic*] sorry to learn that Mrs. Harris is not well. [*sic*] but I trust it is only temporary and it will not be long before she will be well once again."[5]

But apparently the illness persisted well into March of 1932 and beyond: "Hope Mrs. Harris is improving."[6]; and:

> "I was sorry to learn of Mrs [*sic*] Harris [*sic*] bad health. No doubt the unseasonable weather we have been having lately is largely responsible. The winter cannot last much longer and with the return of sure-enough Spring, Mrs. Harris's [*sic*] health will surely also return"[7]

Her health did not return and Clara died on August 12, 1932.[8] These life-long companions were not destined to go into their twilight years together.

Then his friend, colleague, and neighbor, Adam C. Gill, died in November of that same year shortly after his retirement from Cornell (Harris, 1933). Despite all his activity and the best efforts of his friends and his daughter Rebecca, the loneliness and the void in his life caused by these losses must have remained:

> "But you can imagine the sadness of opening Christmas good wishes with the light of our home gone out, But I suppose such things must just be. . . .
>
> "After a hard week of winter we are enjoying beautiful spring-time weather during holidays. . . . Nature is O.K. if man is vile!" [Emphasis in the original.][9]

It appears that his sister-in-law, Bertha Stoneman, came back to New York after Clara's death:

> "We are expecting Mrs [*sic*] H.'s sister from S. Africa in Feb. but fear she will be so wedded to the dark continent that she will be returning after a few months."[10]

But apparently she did stay, at least for a while, for Palmer (1982) lists her among the Charter Members of PRI; however, she was not present at the laying of the corner stone. She was in Chatautqua County at that time, "R.D. 3, Jamestown, New York", and was one of the three people, along with Harris and Rebecca, who signed the $1,000 "Surety Bond" for PRI on October 17, 1934[11]. Bertha Stoneman's name appears also on an undated, but obviously early, list[12] of PRI members with her address listed as "PRI." She did eventually return to South Africa[13], for PRI records show that she resigned her membership "April 31 [*sic*], 1943" (obviously a mis-typed date), and her address then was Huguenot University College, Wellington, South Africa.[14]

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[3] As of 1953, it was still the only such remains ever found that far north (Palmer, 1953a).

[4] James A. G. Rehn, Corresponding Secretary, to Gilbert D. Harris, September 26, 1939. HA-PRI, Ithaca, NY.

[5] Axel Olsson to Gilbert D. Harris, December 28, 1931. HA-PRI, Ithaca, NY. The nature of her illness is not known.

[6] Cecil Card to Gilbert D. Harris, March 15, 1932. HA-PRI, Ithaca, NY.

[7] Axel Olsson to Gilbert D. Harris, March 30, 1932. HA-PRI, Ithaca, NY.

[8] *Ithaca Journal-News*, Monday, August 15, 1932, p. 3.

[9] Original letter, Gilbert D. Harris to "Hodsoni" [Floyd and Helen Hodson], December 29, 1932. HA-PRI, Ithaca, NY.

[10] Original letter, Gilbert D. Harris to "Hodsoni" [Floyd and Helen Hodson], December 29, 1932. HA-PRI, Ithaca, NY.

[11] HA-PRI, Ithaca, NY.

As he approached his retirement in 1934, the largest part of Harris' energies were directed toward his newly formed Paleontological Research Institution. PRI, as it was and is known, was founded in 1932 and chartered by the State of New York as an educational institution October 12, 1933[15]. It is always difficult to determine an individual's motivation when there are few records of their thoughts, but there seem to be at least three, and possibly four, major influences which caused Harris to create PRI. Alone probably none of these would have been sufficient, but in concert they were a powerful force.

The first of these was Harris' fear of fire.[16] McGraw Hall was filled with wooden floors, ceilings, stairways, tables, chairs, etc., all of which were very flammable. One of Harris's great concerns was that his collections could be lost if McGraw Hall ever caught fire. The old wooden inner structure and all the wooden drawers were hardly fireproof. His fears were not unfounded, for fires in university buildings had certainly occurred:

> "Although most of the records relating to your work at McGill University were burned in the fire which destroyed the Engineering building . . ."[17]

Even at Cornell only a few months before Harris retired a fraternity house was destroyed by fire.[18]

As the years went by, he appears to have become more and more obsessed with this fear. As early as 1915 in a letter to Veatch after receiving his $1,000 donation, Harris said:

> "My feeling is that in the end the large collection of type and illustrated specimens to be hereafter collected as well as those that I have been bringing here for the past 20 years should be left finally at Cornell, provided the University see to it that a fire-proof quarter is arranged for their reception. What funds we can accumulate should be left as an assistantship or scholarship with special reference to the care and upkeeping of these collections."[19]

At this time Harris makes no mention of creating a private institution.

Again in 1919, in his budget request to Ries, Harris said:

> ". . . and I hope every effort is being made to either have a small fire proof addition made to this building or to 'fire-proof' the entire structure. Insurance at present seems to be rather high for things in this building [McGraw Hall]."[20]

Ries certainly shared Harris' concern about fire, for in his report for 1922–23, Ries complained about the fire danger in McGraw Hall and mentions the irreplaceable items that would be lost if a fire should occur:

> "Professor Harris has added greatly to the collections of Tertiary fossils, which are a special feature of the research carried on in his branch of the department."[21]

In a letter to Ries, May 2, 1924, Harris carried the fire danger complaints further, this time trying the comparison approach:

> "A student from a neighboring, impovershed [*sic*] institution [unnamed] remarked the other day: What lots of fine things you have here, but Oh [*sic*] if you only had our building! A visiting professor from the West remarked: I admire the class of work you are turning out, but I dont [*sic*] like the quarters you work in. We shall hear these remarks again and again. . . .What is to be done? Personally I can get along without electric fans or even great and marble-floored apartments, even trudge sometimes dozens of times a day up the equivalent of 5 flights of stairs. But what stings me to the quick is the danger I am running here every day of the destruction by fire of almost my life's work.
>
> "I had supposed that mere buildings were comparatively easy to find donors for[22], but we seem to be in the plight

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[12] The list is typed on the same paper and accompanies a dues list which is dated 1936. HA-PRI, Ithaca, NY.

[13] She had a "Power of Attorney" recorded for her in Jamestown on July 9, 1936. Walter L. Miller, Attorney-at-Law, to Gilbert D. Harris, March 3, 1937. HA-PRI, Ithaca, NY.

[14] Membership 1950; Resignations. HA-PRI, Ithaca, NY.

[15] The Absolute Charter was granted on November 20, 1936 (Palmer, 1982).

[16] An Ithaca newspaper column by John Chiment published at the time of the 61st anniversary of PRI made particular note of this fear in the title, "The man who collected fossils and hated fires." *The Ithaca Journal* August 14, 1993. Chiment, a former employee of PRI, was Dean of Freshman at Cornell University in 1995.

[17] Frank Adams to L. C. Graton, March 15, 1913. Heinrich Ries Papers, 14/15/691, Box 1, File 1-17. RMC-KL, Cornell.

[18] *The Ithaca Journal*, January 2, 1934, p. 3.

[19] Typed and signed copy, with corrections in pen. Gilbert D. Harris to Arthur C. Veatch, no date, but written in response to Veatch's letter dated October 25, 1915 which accompanied his donation. HA-PRI, Ithaca, NY.

[20] Gilbert D. Harris to Heinrich Ries, January 25, 1919, Heinrich Ries Papers, 14/15/691, Box 2, File 2-1. RMC-KL, Cornell.

[21] *Annual Report* by Heinrich Ries to Archie M. Palmer, May 23, 1923, p. 2. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[22] Perhaps it was never easy for Geological Sciences at Cornell, for a separate geology building, Snee Hall, was not dedicated until 1984 (Brice, 1989).

> of getting together most notable collections of materials and have no decent and safe building to put them in!"[23]

In his report to Ries for 1924–25, Harris emphasized why fire was such a concern to him:

> "What is most needed here is a suitable building and furniture and help in curator work. No human being can teach, carry on investigational work, be getting the important collections of this Hemisphere in his collections, and giving the results of his work to the world in completed printed reports, and at the same time have time to properly clean, shellac, number, catalog, and put away in convenient place for reference the thousand and one specimens from hundreds of horizons and thousands of localities. Nor is it economical that he should so spend his time. So far as our building is concerned it certainly taxes ones [*sic*] moral courage to be buying expensive books, getting in invaluable collections and feeling, with good reason, that every time the fire whistle blows a great share of ones [*sic*] interest in life may be going up in smoke. it seems as tho [*sic*] there must be some way out of this strange situation."[24]

Ries was cognizant of the situation and, again, made a point of stressing in his *Annual Report for 1924–1925* the value of Harris' collections:

> "The collections which he [Harris] has crowded on the top floor, can probably not be duplicated anywhere in this country, and are of great value for students interested in his particular field."[25]

The following year Harris was at it again:

> "What is most needed inpaleontologic [*sic*] geology here at Cornell now is a modest, compact, fire-proof museum building with a curator in charge."[26]

In none of the existing letters and reports written before the autumn of 1926 in which Harris spoke about the danger of fire and the need for fire-proof quarters does he suggest having such a building anywhere except at Cornell. But note the change in this letter from 1927:

> "Of course, the chronic disease, the stupefying factor here at Cornell in Geology today is the lack of facilities for the utilization of such materials as we already fortunately have.
>
> "Personally I am going into publication far more extensively than heretofore, but with more and better room could accomplish twice as much with half the energy.
>
> "I have sometimes seriously thought of removing everything not belonging to the University to an outside building, but have hesitated on account of desiring to *teach* by *doing* before the students themselves." [Emphasis in the original.][27]

In Harris' mind, the move had been made, and the reason seems clear; between the first letter quoted above (May, 1926) and the second (May, 1927), Harris and Maury had their confrontation (December, 1926), as detailed in a previous section. This change in Harris' mind from having all his collections at Cornell to leaving nothing at Cornell appears to have developed as a direct result of the Maury affair, and was an extension of his ideas on the need for a fireproof structure. In a portion of the 'apology' letter to the President in December, 1926, cited earlier, this transition can be pinpointed:

> "If necessary to protect the University from criticism *I can build some roomy apartment, off the University property* and collect therein ally [*sic*] my own and these various collections that might possibly cause embarrassments and hence relieve all anxieties."[Emphasis added.][28]

Even as he was contemplating a solution to his difficulties, Harris was still hammering away at the potential fire danger and Ries mentioned it again in his *Annual Report for 1926–27*, "The danger from fire is a menace which is continually with us."[29]

The following is yet another excerpt from a letter Harris wrote to Ries which further demonstrates his almost morbid fear of fire. Harris was writing on his own stationery, with the letterhead, "Paleontological Laboratory, Cornell University" and sending the typed letters to Ries; they were communicating by formal letter from one floor of McGraw Hall to another. In this letter Harris complained, again, about the fire danger, but used somewhat stronger language about moving his material elsewhere:

> "My amazement grows daily as I see heaps of ejectementa from the various geologic rooms and dens containing semi-burned matches by the hundreds and smell the odor of ignited tobacco.
>
> "Now there must be some way of stopping this matter. Of course these yongster [*sic*] who have nothing at stake care little, but if we have several tens of thousands of

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[23] Gilbert D. Harris to Heinrich Ries, May 2, 1924. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[24] *Annual Report for 1924–25* by G. D. Harris, N.D., pp. 1–2. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[25] *Annual Report for 1924–1925* by Heinrich Ries to R. M. Ogden, May 7, 1925, p. 3. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[26] G. D. Harris to Heinrich Ries, May 4, 1926. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[27] G. D. Harris to Heinrich Ries, May 24, 1927. Heinrich Ries Papers, 14/15/691, Box 1, File 1-23. RMC-KL, Cornell.

[28] Unsigned carbon copy of letter from Gilbert D. Harris to Livingston Farrand, President, Cornell University, December 16, 1926. HA-PRI, Ithaca, NY.

[29] *Annual Report for 1926–1927*, by Heinrich Ries to R. C. Gibb, May 28, 1927. p. 4. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

> dollars worth of types and rare publications needed in the promotion of science it is not fair to let this matter drag along unchecked, and I shall certainly see to it that my things, are disposed of elsewhere if Cornell does not show a vivid interest in not particularly my welfare, butthe [*sic*] welfare of sience [*sic*]."[30]

Ries looked into the situation immediately, and he did not let Harris get the better of him over the issue of fire hazards. As he explained in his reply, a quick inspection of McGraw revealed the worst potential for a fire to be in Harris's own paleontology laboratory:

> "If you will present me with a more exact information as to *where* you have seen these 'heaps of ejectementa' and 'semi burned matches by the hundreds', I shall be very glad to give the matter prompt attention. I have told you many times that no one is more worried over fire in McGraw than I am, and I also suspect that I keep a much closer watch over conditions in the entire department than you do, for I have the interest of the whole organization at heart, and realize that others besides yourself have irreplaceable collections.
>
> "Incidently, it may also be added that the fire inspector makes periodical visits to McGraw, and it was in your own rooms that he has reported some of the worst conditions. You may remember the time I visited the top floor with Mr. Curtis [the fire inspector], and in your northwest room found a lighted bunsen burner, perched on a narrow board over a bushel basket of waste paper.
>
> "[Handwritten at the bottom.] P.S. Possibly some of the fumes of ignited tobacco which you refer to may come from some of your own students who are known to descend to the floor below yours when they want to smoke." [Emphasis in the original.][31]

Yet, as indicated earlier, Ries was not unsympathetic to the need for better quarters. For years he had been trying, without success, to get the new and more fireproof facilities Harris, and he himself, wanted. In the 1919–20 report, after stating what an unfavorable impression the geology facilities made on visitors, he asserted that the department facilities were "actually *hindering the growth of the department*" [emphasis in original]. Ries had tried a different approach in 1923. As large enrollments forced the department to use the basement, in a letter to President Farrand, Ries complained that the area, ". . . is really not fit for women students to work in."[32] The university administration, however, apparently never seriously considered building new quarters for geology, even though President Farrand's 1931 report mentioned that this was "one of the real needs of the university."[33]

Given the animosity that appears to have existed between the two men, it would have been expedient for Ries to communicate to Harris what he was doing and that the fault of non-action did not lie with him or the Department, but it is difficult to tell if Ries told him or not. Harris did, however, know of Ries' attempts to make the University Administration aware of the situation in McGraw Hall. Monroe G. Cheney[34] appears to have sent Harris a letter he received from Ries in February, 1930, in which Ries described the needs of the department. At the top of Ries' list was the plea:

> ". . . we are sorely in need of a new building, in which we can feel safe from fire, . . . For some years I have stressed this matter as strongly as I knew how in my annual reports to the Dean, until he must be tired of hearing it, but I shall continue to do so."[35]

On the strength of that letter, just before a meeting of the American Association of Petroleum Geologists (AAPG) in New Orleans, Cheney sent an open letter to "Fellow Cornellians" (presumably only those who had connections with the Department) in which he outlined the problems and requested assistance. In this letter he had a long quotation from a letter he had received from Harris. Once again Harris put forth his idea about a having separate entity. Cheney quoted Harris as writing:

> "I would like to see a small, very substantial fire-proof section of a building commenced in this generation, with a possibility in the plan for future expansion. And I am convinced that the value of such a building would be such that the building and materials would be known and used by all real geologic investigators, Cornellians or otherwise. I think there is a way of inlisting [*sic*] real men in a real cause, *with no personal names* or strings tied to it." [Emphasis added.][36]

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[30] G. D. Harris to Heinrich Ries, April 20, 1928. Heinrich Ries Papers, 14/15/691, Box 1, File 1-23. RMC-KL, Cornell.

[31] Carbon copy, with handwritten P.S., Heinrich Ries to G. D. Harris, April 20, 1928. Heinrich Ries Papers, 14/15/691, Box 1, File 1-23. RMC-KL, Cornell.

[32] Heinrich Ries to Livingston Farrand, March 27, 1923. Heinrich Ries Papers, 14/15/691, Box 1, File 1-23. RMC-KL, Cornell.

[33] In a letter to "Fellow Cornellians", Cheney quoted Farrand as saying that, ". . . he [Farrand] considers that better geological quarters and facilities are among the foremost needs of the University." M. G. Cheney to Fellow Cornellians, March 8, 1930. HA=PRI, Ithaca, NY.

[34] Monroe G. Cheney (B.S. '16), later President, Anzac Oil Corporation, Coleman, Texas. The Monroe Cheney Fund was created at PRI by a donation from his widow in 1969.

[35] Heinrich Ries to M. G. Cheney, February 8, 1930, and bearing Ries' signature. HA-PRI, Ithaca, NY.

[36] M. G. Cheney to "Fellow Cornellians", March 8, 1930; copy sent to Harris attached to Ries' letter of February 8, 1930. HA-PRI, Ithaca, NY.

Note Harris' desire not to have a person's name on this new building or organization. Later, this was to play a major role when the final name for his new entity was decided.

The fear of fire, and his distaste for University involvement in what he obviously felt were his own affairs, appear to have planted the seed which in six years grew into reality. Yet PRI was nurtured by two additional conditions beyond his fears of both fire and not having total control of his own affairs and collections.

As Harris approached retirement, he had greater and greater anxiety about how to protect his collections and, at the same time, insure that the work to which he had devoted his life would continue. When Harris arrived at Cornell as a student in 1883, the center portion of McGraw Hall from the second to the fourth floors was devoted to a large museum. The museum is largely forgotten now at Cornell, but it was a substantial enterprise. At its peak, it included a large, three story, open gallery with a central atrium lined with balconies on the third and fourth levels. It housed many exhibits, both geological and non-geological, *e.g.*, several mounted specimens of recent animals and even a real Egyptian mummy (Brice, 1989). In addition to literally thousands of invertebrate fossils and Recent shells[37], the museum housed complete skeletons of fossil vertebrates, both real and full-sized casts, including a life-sized cast of a giant sloth skeleton. Harris had watched this University museum and its collections slowly disappear through neglect and indifference (Brice, 1989). Now as he neared retirement, he was faced with the prospect of having his life's work being similarly abandoned or at best not cared for properly:

> "I don't want to see my material, the work of 40 years, thrown into ash-cans. Furthermore, I want to be sure that the research will be carried on where I left off and that the collection will not fall into disuse in unsympathetic hands. After all, great cathedrals aren't built in a day or a year."[38]

So, this gave him another reason for having a separate facility; his fear of fire, the University having some control over who could or could not use the collections (exemplified by the Maury affair), and now his fear that no one would care for the material after he was gone.

But there is one more condition which, when added to the other three, helps explain his desire to create a separate entity, separate from Cornell or any other influence. This, furthermore, may have been at the heart of why there was such animosity and bad feeling toward Cornell on the part of Harris and both his real and his "paleontological" family; namely his perception of how he and his work was judged by the University administration and his colleagues.

Running through many of his reports and letters to Williams, Ries, and other University officials are statements which suggest Harris felt his work was neither fundamentally understood nor appreciated by his superiors. This is evident, for example, in his Annual Report for 1927–28:

> "I am well aware that all departments in the University could use to advantage more funds. But I say bio-geology should be considered first on account of what we have already personally done for its needs. The running of free excursions for 20 years by boat has not been duplicated by many departments, to mention but one item. The offering of ready means for publication of desirable paleontologic papers is not duplicated in every department. The use of photostat, type material, personal equipment in general, does not fall into the hands of students in every department."[39]

Earlier he had written:

> "We have had, therefore, to rely largely upon our own resources, chance associations with State and National surveys, special expeditions and various connections with exterior organizations for our support in our museum work and materials."[40]
>
> "And until some rather sweeping changes are made in plan of work, plan of announcements, teaching staff, quarters and appropriations I cannot look forward to great improvements here [at Cornell].[41]

Even in a newspaper article about the founding of PRI, there is the comment:

> "This cataloging and collecting Professor Harris has been doing for forty years, [was] all [done] at his own expense, [and] mostly with his own hands. . . . He bought the press with his own funds out of a salary that until ten years ago was not more than $1,500 a year. He worked extra in summer vacations to raise small sums for geology expeditions"[42]

This is a classic case of not telling the entire truth. Certainly what is in the article is true, but what it doesn't say is that the $1,500 represented only half-salary and that Harris himself requested the arrangements. But it seems Harris saw this article as an opportunity to tell the world how badly Cornell had treated him, and to demonstrate how unappreciated he was.

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[37] *e.g.*, The Newcomb Shell Collection which was originally purchased by Ezra Cornell and now resides at PRI.

[38] *Ithaca Journal-News*, April 1, 1933.

[39] *Annual Report for 1927–1928* by G. D. Harris for Heinrich Ries, May 8, 1928, p. 3. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[40] G. D. Harris to Heinrich Ries, May 2, 1924. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[41] Page 1, Annual Report by G. D. Harris to Heinrich Ries, May 4, 1926. Heinrich Ries Papers, 14/15/691, Box 2, File 2-4. RMC-KL, Cornell.

[42] *New York Herald Tribune*. Sunday, July 16, 1933.

Thus, is seems in Harris' mind he had four different, but related, pressures pushing him toward the eventual split with Cornell. It is interesting to note that the split was not total, however; for over 10 years after his retirement, Harris still maintained some quarters at McGraw. At least that seems to be the situation described by Ries:

> ". . . an investigation . . . [would] find that Professor Harris is now [1945] occupying considerably more space with his property than I am."[43]

The small platen press remained in McGraw Hall until 1948 (Palmer, 1982).

Starting as early as two years before his formal retirement from Cornell, Harris carried his idea to some of his former students, several of whom expressed their concern for the work at Cornell after he retired:

> "I am heartily in accord with the ideas expressed in your letter of February 20th regarding a building to be known as the 'Hall of Types.' "[44]
>
> "Whatever *is* going to happen to the department which you've spent so many fertile years to build up? Your last letter in which you mention that as yet no visible successor was being groomed for the paleontological department, frankly perturbs me. . . . My technique would be to stress what the department has done and in true alumnus style vigorously inquire what is going to be done when the old guard goes. Please let me know what your ideas are on the subject, for I feel we all owe it to you to first ascertain what *you* think is best, not only for the personal attachment but for the good of the department with the workings of which you are fully acquainted."[45] [Emphasis in the original.]

Not all of his former students seemed to feel a separate organization was altogether a good idea, Olsson wrote:

> "We have made such a start in Tertiary paleontology and it would be an everlasting disgrace if this work was suspended at Cornell in the future. Under the deplorable conditions in which the world finds itself today, the only thing we can do is to wait and hope for the best. . . . Until there is at least a change for the better and some assurance for the future, I personally believe that any other plan now would be sure to fail. This may not be a very bright picture to draw but all is not yet lost at Cornell and our first obligation is to her."[46]

But Olsson finally gave his blessing to the idea, although at the time he did not feel he could offer financial support:

> "I am very much interested in your new plans for your lab. [*sic*] and I hope you will be able to carry the project through to completion. In normal times as it was a few years ago, I could and would have considered it a privilege to take part in it but at the present time I can see no way of doing so. With taxes and other expenses continually rising from which there is no escape and no income, these times are very difficult and the prospect of any immediate change for the better is not rosy. However when I am once again on an earning bases [*sic*] I will be very glad to join your Paleontological company and become a share-holder. I have always dreamed of having a paleontological lab. [*sic*], but your idea is much finer than anything I could possibly visualize. There is no doubt that Cornell has got into a rut and intends to stay there. Still you have a year or more at Cornell and so there is really no need of rush or worry."[47]

In only a few short months, Olsson was to become a founding member of this new organization.

Harris worked with his family law firm in Jamestown, New York[48], to prepare a charter and a set of by-laws for a research institution. In the spring of 1932, Harris transferred title to a small strip of land on his property at 126 Kelvin Place that opened onto Dearborn Place to his new Institution, and the cornerstone for a future building was laid on June 28 of that year. This was marked with a simple ceremony, as might be expected of an occasion presided over by Harris. Each of those present inserted a particular object into the cinder block cornerstone, and, assisted by one of his graduate students, Stephen M. Herrick, (A.B.'27, M.S.'29, Ph.D.'33), Harris cemented it over. Participating in that historic event were Harris's wife, Clara, and their daughter, Rebecca; his friend, colleague, and neighbor, Professor A. C. Gill, and Mrs. Gill; Axel A. Olsson; three other former students, Pearl G. Sheldon, Beatrice Bolton (Mrs. Celton Hughes), and Katherine Van Winkle Palmer. The proceedings were watched over with great interest by Herrick's dog, Pat. Professor E. Laurence Palmer, husband of Katherine, took photographs and recorded the event on movie film, which resides in the PRI archives. Apparently within about a year, Harris had a small building in place over this new corner stone:

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[43] Heinrich Ries to Edmund Day, President, Cornell University. Heinrich Ries Papers, 14/15/691, Box 2, File 2-9. RMC-KL, Cornell.

[44] A. C. Veatch to Gilbert D. Harris, May 16, 1930. HA-PRI, Ithaca, NY.

[45] Norman Weisbord to Gilbert D. Harris, January 10, 1932. HA-PRI, Ithaca, NY.

[46] Axel Olsson to Gilbert D. Harris, March 17, 1932. HA-PRI, Ithaca, NY.

[47] Axel Olsson to Gilbert D. Harris, April 4, 1932. HA-PRI, Ithaca, NY.

[48] Wilson C. Price, Attorney and Counselor at Law, to Gilbert D. Harris, April 19, 1932. HA-PRI, Ithaca, NY.

> "Liddle was out to see me a few months ago and was much pleased with the Cabina [the name of the first PRI building]."[49]

Palmer (1982), however, indicated that the building known as the "Cabina" was not erected until late 1934, the year after Liddle saw the "Cabina" according to Harris' letter, and was not ready for occupancy until 1935:

> "After his retirement from teaching in 1934, he [Harris] financed the construction of a two-storied cinder black structure of 4800 square feet of four rooms with central stairway and fireplace . . ." (Palmer, 1982, p. 7).

Perhaps Harris meant to say that Liddle was pleased with the *plans* for the Cabina, or Palmer, who wrote the PRI history almost 50 years after the events, was simply confused about the dates, even though she was there when it happened. To further confuse the issue, in 1949 Harris himself said:

> ". . . in 1932, a small fire-proof [*sic*] structure was erected, and certain collections of fossils and books were installed." (Palmer, 1982, p. 22; Reprint of a letter to the PRI membership, May 1949).

This seems to support the idea that there was a building in place before he retired. In any case, the building was built, PRI was really underway, and the first official meeting in the Cabina took place on April 6, 1935.

The official Founding Members were Harris and his daughter Rebecca; former students (in order of their association with Harris), Axel A. Olsson, Pearl G. Sheldon, Ralph A. Liddle, Katherine V. W. Palmer; and Burnett Smith, a retired Syracuse University professor of geology and paleontology (Palmer, 1982).

After some wording changes in the Charter and By-Laws required by the Board of Regents of the State Education Department, PRI was granted a provisional charter on October 12, 1933, and a permanent charter was issued in 1936. Originally Harris had wanted to use the name *American Paleontological Institution*[50], but the State Education Department felt that this name was too broad and presented some misrepresentation (Palmer, 1982):

> ". . . the Regents do not approve of American Pal. Inst. as a name, fearing we are pretending to be more han [*sic*] we are, presumably. I have suggested other ways our but have failed. Still, maybe some of my last suggestions will carr , [*sic*] and Oct. i2th [*sic*] was the day they were o [*sic*] decide on charter granting."[51]

That name did appear in a newspaper headline atop an article about the founding of PRI which was published before the state charter was granted. The headline was "Harris' Museum of fossils Forms Nucleus of American Paleological Institution."[52] In another letter Harris used the name *American Institute of Paleontology*[53], which is close to the final name. Even though Harris used the word *Institute* in a letter, Palmer said:

> "It always annoyed Prof. Harris when the organization was referred to as the Paleontological Research 'Institute.' There is a difference [which Palmer did not explain]." (Palmer, 1982, p. 5)

As indicated earlier, Harris was adamant that neither his nor any other person's name be in the title of the Institution, and that there be no official connection with Cornell University (Palmer, 1982).

By the time the provisional charter was granted in 1933 the PRI had captured at least some of the media. Even the *New York Herald Tribune* had an article about it: "Museum built for Shell and Bone at Ithica [*sic*]"[54] quoted Harris as saying the reason for creating it was, "to keep safe some 'things money can't buy.'" The "things', according to the article were, "said to be part of life of 100,000,000 years ago."; the article didn't even get the age correct.

As an aside, it is interesting to note that in the conversations on which this article were presumably based, Harris appears to have used the word evolution:

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[49] Original letter, Gilbert D. Harris to "Hodsoni" [Floyd and Helen Hodson], October 15, 1933. HA-PRI, Ithaca, NY.

[50] The name appears in the photostat of a letter from Charles E. Weaver to Gilbert D. Harris, April 6, 1933. In the letter Weaver agrees with Harris that the arrangement is, ". . . an opportunity for the development of an organization where research may be carried on without restrictions of any University and for that reason it seems very desirable to have the entire plant off of University grounds . . ." HA-PRI, Ithaca, NY.

[51] Original letter, Gilbert D. Harris to "Hodsoni" [Floyd and Helen Hodson], October 15, 1933. Also in this letter Harris indicates that he had been ill for several weeks with kidney problems. HA-PRI, Ithaca, NY.

[52] *The Ithaca Journal-News*, April 1, 1933.

[53] This name is typed in capital letters at the top of an unsigned carbon copy of a letter, Gilbert D. Harris to "Dr. Bowen", March 12, 1933. This would be C. F. Bowen of Standard Oil Company as Harris received a letter from him June, 12, 1933, with a list of Brazilian fossils and the March letter was about Brazilian fossils. HA-PRI, Ithaca, NY.

[54] *New York Herald Tribune*. Sunday, July 16, 1933. The page and section are not known, for the article appeared in a regional edition, and that part was not included in the microfilm records which were of the "Final Editions" of the newspaper.

> "They [the fossils] are things which evolution discarded and threw out of the procession of life 100,000,000 years ago. Valuable because they are the last of their kind, records of 'horizons' of the past, essential pieces in a jugsaw puzzle which is expected some day to show man 'whence he came' "

This small statement is the only record known of Harris' thinking on the concept of evolution. Even in his historical geology text he did not go into the subject in any depth. In the Introduction he said:

> "If we are, as geologists claim, not children of an hour but of the tenth part of a second, geologically speaking, how can we presume to know the course of past and future ages of earth history? Is the life history of any organism whatever to be determined by a mere glance at its form at one stage of development? What botanist would attempt to write the life history of an oak if he never saw it except from the window of the Empire State Express?[55] What zoologist would feel competent to rush into print concerning the life history of a porpoise if he had observed it but once from out the cabin window of a Transcontinental steamer as the creature darted between two waves? But reflect for a moment, if along side a full grown oak the botanist could get a glimpse of oaks all the way from but a few inches in height to those already falling with decay, and the zoologist could see a whole school of porpoises of various sizes or stages of development, then the life histories of these subjects would no longer be so obscure although many of their earlier stages could only be surmised. . . . (Harris, 1907c, p. 3)

And in the section about the origin of life:

> "It is doubtless quite true that in general animals of simple structure preceded those of complex structure. The first forms of life were doubtless unicellular." (*Ibid*, p. 57).

From these excerpts from his text, it appears that Harris did at least agree with the idea of evolution. Exactly what he believed about the processes and mechanisms of evolution however, is unknown. Although in his text book he followed and described an evolutionary pattern of change in life forms, he apparently never published any general discussion of the topic.

When the time came to begin the transfer of samples from the Cornell Geology Department to PRI, confusion must have reigned supreme. Years earlier, a former classmate had remarked on the chaos in Harris' collections:

> "I am glad to learn that your are overhauling the plant material with the other fossils in the Museum. I hope you will turn up some interesting material. I dare say that there is a great lot of work to be done on your collections. When finished the fossil series will be far more efficient as a means of instruction for students."[56]

As the collections were divided, Ries had to shoulder the task of overseeing the collection separation and making certain that something was left for the University:

> ". . . because of Prof. Harris' retirement it became necessary to take stock of the collections on the top floor. As I [Ries] suspected they are in a most confused condition, and it will take some work to get them straightened out, for although some $1400 has been allowed for curatorial work on them during the past four or five years, little cataloging or arrangement of specimens has been done, in fact we had to depend to a large extent on Prof. Harris to tell us what belonged to the University and what to other people. I shall use the $200 allotted for curatorial work in the new budget towards making a start to get things in some sort of shape before a new professor is appointed."[57]

There was some truth to what Ries said about the lack of curation work with the fossils that were collected by the various expeditions. Apparently the groups would collect vast amounts of material, but then not have time to really prepare and describe what they brought back to the laboratory. Olsson (1914) and van Winkle and Harris (1919) used some samples collected on the 1897 *Ianthina* trip, 22 years later. And in 1921:

> ". . . more material from the '97 trip was found in the laboratory which had not been worked up." (Van Winkle, 1921, p. 352).

(Certainly Harris was not unique in being slow to get to material. For a thesis study (Howell, 1925), Harris loaned Princeton University several drawers of trilobites collected by C. F. Hartt in New Brunswick in the 1860s. These samples were not returned to Cornell until the 1980s.[58])

Even after some of the dust of Harris' move had settled, there were still problems concerning the collections. In Ries' mind, Harris had removed much more than necessary. Note the reference to course prerequisites, which was always a subject of contention between Harris and Ries:

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[55] The name of a fast passenger train of the day.

[56] David White to G. D. Harris, April 18, 1910. HA-PRI, Ithaca, NY.

[57] *Annual Report for 1933–34* by Heinrich Ries, N.D., pp. 2–3. Heinrich Ries Papers, 14/15/691, Box 2, File 2-17. RMC-KL, Cornell.

[58] These were returned to me after Snee Hall was opened in 1984. Princeton closed out paleontology and discovered the samples, still in the original drawers, with the Cornell labels on them. A friend was on the Princeton faculty then and knew of my connection to the Cornell Department and gave them to me at a Northeastern Section/Geological Society of America meeting.

> "The courses in paleontology and stratigraphy are running satisfactorily, but they are handicapped by lack of study material, although Dr. Merriam[59] is attempting to overcome this trouble as rapidly as possible. I am glad to remark that he [Merriam] insists on his students having the proper prerequisites for his courses, so that is something I have not had to worry about since he took charge of the work in his branch. . . ."[60]

Several years later, Ries remembered the problems of collection ownership this way:

> "When Harris was about to retire an inventory was made of the property in Paleontology, whereupon it developed that of the 3300 odd drawers of fossils only about 1300 were acknowledged to be university property of which abut 3oo [*sic*] are practically of no value unless we can find the key to the letters on them. About 1300 [drawers] were listed by Harris as his property, while Caster claimed about 250, the remainder being said to be the property of various other people. It will be seen that the collection belonging to the university is wretchedly small. . . . He [Harris] removed all of his 'types' to his 'Institute' and with them went some of the types that belonged to the university, as was subsequently discovered accidently. A lot of Miss Maury's San domingo types have disappeared."[61]

To fully appreciate the step Harris was taking in starting PRI, one must consider the economic conditions of the nation at the time. 1932 was the height of the Great Depression; banks were failing by the hundreds, and bread lines were a common sight all across the nation. Yet, Harris went ahead with his dream, ignoring the pessimism of the day, for in his mind the alternative of leaving everything at Cornell was far worse. But it was, even then, a strange type of institution, for it came into existence with:

> ". . . no elaborate fanfare, no fund raising, no ballyhoo, nor subscription plan to start or promote the Harris concrete, but perhaps Utopian, scheme of a long term establishment. No private endowment funded or blessed this extremely informal modest enterprise." (Palmer, 1982, p. 5).

There is a certain irony in that as Harris was contemplating how he was going to raise the capital to put a building around his new corner stone, to Hodson he related the following:

> "Simonds writes they are moving in their grand Geol. bldg [*sic*], a building far finer that he ever dreamed of, and he has lived to see it. Texas is putting thru [*sic*] a $5,000,ooo.oo [*sic*] building program."[62]

In addition to his salary from Cornell and the fees he was paid by various oil companies, Harris apparently was renting the family farm[63] and he had subdivided part of the land, built houses on some of it and was renting them. According to surviving records, in 1939 Harris was selling land for $200 and acre and $250 for a corner lot[64]. Given the times, it is not surprising that he received the following letter; with a return address, "104 Harris Avenue":

> "I was wondering if it were possible for you to come down on our rent as I have had a fourteen 14.00 [*sic*] dollar a month cut in my salary and will be impossible for me to stay here at the present rate. I most assuredly hate to move from here as it is a very pleasant house & my wife & myself have become very much attached to it."[65]

And another letter, this time from "68 Harris Avenue":

> ". . . I deposited $25.00 to your account yesterday which is to apply for the month of Feb. and I will make another deposit for the month of March at a later date."[66]

As Harris approached the end of his time at Cornell, he began the transition from university professor to director of the private institution[67]. He converted the third floor of his house into a temporary laboratory and a new rotary cylinder printing press went into his basement. Later, as furnishings were purchased for the Cabina, Harris allowed only metal tables, chairs, and specimen cabinets as they would not burn easily. Finally he had his fire-proof building. Ironically, the only source of heat for the building was an open fire place. As the 1930s vintage concrete blocks were quite porous to the cold Ithaca winter winds, that fireplace was, no doubt, well used. The newspaper articles about the creation of PRI underscored the fire-proof aspect, but most did not get the name correct:

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[59] Charles W. Merriam, who replaced Harris (Brice, 1989).

[60] Heinrich Ries to R. M. Ogden, Dean, Cornell University, May 31, 1937, p. 2. This letter served as the Annual Report for 1936–1937. Heinrich Ries Papers, 14/15/691, Box 2, File 2-2. RMC-KL, Cornell.

[61] Undated notes prepared by Ries after Harris retired in 1934 and before Charles Merriam left in 1942. Heinrich Ries Papers, 14/15/691, Box 3, File 3-2. RMC-KL, Cornell.

[62] Gilbert D. Harris to Floyd Hodson, April 12, 1933. HA-PRI, Ithaca, NY.

[63] Cecil Card to Gilbert D. Harris, March 15, 1932. Mr. Card discussed the land taxes and electric bills he had paid, and requests Harris' presence to ". . . get the work for the summer planned. . . ." HA-PRI, Ithaca, NY.

[64] Unsigned carbon copy sent to Harris; Newman & Adams, Attorneys and Counselors, to William H. Feltcher, Jr., Esq., June 29, 1939. The letter was refusing an offer of $600 and outlining the prices Harris was asking. HA-PRI, Ithaca, NY.

[65] DeForest L. Strunk to Gilbert D. Harris, March 3, 1932. HA-PRI, Ithaca, NY.

[66] W. Edwin Carlson to Gilbert D. Harris, March 6, 1932. HA-PRI, Ithaca, NY.

[67] Although he was not officially elected to that office until June 2, 1950, everyone understood who was in charge (Palmer, 1982).

> "This institution, already chartered by the state board of regents, is established in a fireproof museum named by Professor Harris 'The Hall of Types,'[68] built with $3,000 of his own funds in the backyard of his home at 126 Kelvin Place."[69]

Certainly his former students appreciated the new facility, especially for its "fireproof" nature:

> "It is also of considerable satisfaction to know that our type material will be securely housed and properly cared for in the fireproof vault of the Paleontological Research Institution which Professor Harris has sponsored, to his everlasting credit. May this institution grow and prosper and ever increase in usefulness to students of paleobiology. May it also quicken interest in and appreciation for paleontologic research in the community in which it was established." (Flower and Caster, 1935, p. 200)

Not long after the beginning of PRI, Harris and a former student, Helen Tucker (Ph.D.'37; Mrs. Richards Rowland), had a serious disagreement, along the same lines as the situation with Maury. This one seemed to be centered around fossil collections that belonged to her which Harris wanted for PRI. Tucker appears to have come to Cornell about 1932. Among Ries' papers are letters of reference for her, and one is from Kirtley F. Mather of Harvard University.[70] She had attended a summer school course of his. One of Harris' former students, however, Ernest Rice Smith at Depauw University, had not had a very pleasant experience when she was in his department:

> "I don't believe you can realize the continual tension between Miss Tucker and me. It is terrible. I never saw the beat of that woman. For instance, I have the feeling that she has sent a student who was griping on me to the Dean. I'm not the only one who feels so, yet no one can prove it."[71]

> "I will be perfectly frank. We have been under such heavy expense this year together with decreased income I had even considered not coming to Ithaca myself this summer. yet I feel it very important for her sake, for my sake, for the sake of the department here, to move her on. How would you feel toward this? You urge her to try for the $300 scholarship there."[72]

Eventually she did come to Cornell to do work in paleontology with Harris. Shortly after she came to Cornell, her life was further complicated by the loss of all of her money when a bank failed.[73] In any event, she had difficulties and, given Smith's letters, in Harris' mind she no doubt came to Cornell under a cloud of suspicion. But despite all this, she and Harris appeared to develop a good working and personal relationship which lasted for several years. She was a Charter Member of PRI.[74]

Druid Wilson, a colleague of Tucker at Cornell, had known her at Florida Southern College prior to her coming to Cornell. He found her to be a good teacher, but not as careful with her research as she might have been. In fact Wilson said[75] he was unhappy with some errors in their first joint paper (Tucker and Wilson, 1932a), but he never saw the manuscript until it was too late to have his name removed. According to Wilson, the two of them were seldom in the field together, and he did most of the actual collecting, but they did publish a series of papers on Florida fossils (Tucker and Wilson, 1932b,c, 1933). So Tucker was active in paleontological research before and while she was at Cornell.

In 1935, she was granted Department funds to ship the fossils she collected in Florida back to Ithaca.[76] In addition she had amassed a collection of material from Cuba, and Harris apparently wanted these collections, which through some arrangement with him were stored in the basement of his house. He must have quoted her a price that was not even reasonable:

> "At no time has my Florida, Cuba, or any part of my other collections been offered for sale. If it were, I am too well informed in regard to the cost of collecting and transporting it to Ithaca to sell it for any such figure as you quote to me in your note. I do not see how you can advance

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[68] Harris used this name in a letter to Veatch in 1930, cited earlier.

[69] *The Post-Standard*, Syracuse, New York, November 4, 1934. The page and section are not known, for the article appeared in a regional edition, and that part of the newspaper is not included in the microfilm records which were only of the "Final Editions."

[70] Kirtley F. Mather to F. H. Richmeyer, Dean, Cornell University, March 7, 1932. Heinrich Ries Papers, 14/15/691, Box 1, File 1-61. RMC-KL, Cornell.

[71] E. R. Smith to Gilbert D. Harris, November 16, 1931. HA-PRI, Ithaca, NY.

[72] Personal letter, E. R. Smith to Gilbert D. Harris, February 23, 1932. HA-PRI, Ithaca, NY.

[73] Heinrich Ries to Eliot Blackwelder, October 5, 1941. Heinrich Ries Papers, 14/15/691, Box 3, File 3-3. RMC-KL, Cornell

[74] Helen Tucker is listed as a Charter Member in the minutes for October 6, 1934 (Palmer, 1982, p. 6).

[75] Personal communication, September 6, 1995.

[76] Heinrich Ries to Helen Tucker, July 22, 1935. Heinrich Ries Papers, 14/15/691, Box 1, File 1-61. RMC-KL, Cornell

> any suggestion that I might beowing [*sic*] you freight.[77] I am very certain such can not be the case. If you like, I shall be glad to consider any reasonable figure which you may quote for storage charges, even though you invited me to store the collections in your basement without any mention of such storage charges. I have the figure which Deans [a local moving and storage company] quoted to me at the time, and if you expect me to do so, I shall, of course have no choice but to try to raise the money somehow, [*sic*]
>
> "I should like to have an answer at once so that I can make arrangements to have the collections moved to-day, or to-morrow [*sic*] at the latest. Do you also consider that my types an [*sic*] other figured material should be removed from the collections of the Paleontological Research Institute? As I recall the matter, I have also a copy of Montfort[78] temporarily on deposit there.
>
> "I had hoped, and I still see no reason for this move on your part, that your feelings of bitterness against me might not lead to the point where it would involve scietific [*sic*] work or materials. However, it is your choice, and you very evidently do not care to explain the reasons for your actions.
>
> "Should you so desire, I shall be glad to send my fromal [*sic*] resignation as a charter member of your Institution. Feeling as you do at present I can see no reason for my attempting to clear up the present situation."[79]

What Harris wrote or said to her after receiving that first letter is unknown, but it certainly prompted immediate action on her part:

> "I think it is well for me to carry out the plan which I suggested to you in my first letter to-day [*sic*]—of removing all my collections and books from your basement and the Paleontological Research Institution. I have, therefore, arranged with Deans to bring me over at ten o'clock, Thursday morning, April 25th. I hope this will be convenient for you because it seems to be the only hour I am free that Deans can come. I hope that you yourself can arrange to there [*sic*] so that there may be no doubt in your mind in regard to the items which I remove.
>
> "I have number [*sic*] of boxes in the [Harris] basement; a book, a box of East Indian Permian, types and figured material in the Paleontological Research Institution which I shall arrange to have placed in a fireproof warehouse. I have no intention of making it impossible for workers here, or elsewhere, to study any of my specimens either now or in the future, but I do intend to avoid a repetition of a situation such as must have inspired your communication to-day [*sic*]."[80]

Several months later, she still had not located all her collections, and even some of her personal property. She wrote to Katherine Palmer:

> "I am returning the toaster, which I had never seen before it was left at the house. Mine was, you may recall, a large one with a rack, and in good condition. If it has been misplaced we will simply drop the matter.
>
> "You may also recall that I sent you a small barrel, i.e., a nail keg, of Indiana Salem (Mississippian) fossils, of which you have returned a mere handful of the material from which the fossils have been removed. Have they, also, been misplaced, or may I expect them to be promptly returned?"[81]

A few months later, Tucker, after removing all of her material, asked Harris for permission to study some of Olsson's Miocene types either at PRI, ". . . or to have Miss Schoonover[82] bring them to McGraw Hall for that purpose."[83] At this point Harris must have exercised his prerogative to select who would use the collections at PRI—one of the main reasons behind the creation of PRI—and he refused her permission to use the fossils. Tucker wrote to Harris in reply:

> "Last year I sent my resignation from membership in the Paleontological Research Institution. So far as I have been informed, no action was taken on the matter. Would [*sic*] it be unreasonable for me to ask for an immediate reply?
>
> "I have no wish to have my name connectend [*sic*] in any way with an an [*sic*] organization which refuses to cooperate with workers in other institutions, as I am informed yours does. Nor do I wish to be connected with an organization which seemingly attempts systematically to convey the impression that there is a connection between it and Cornell University and then fails to open its facilities to students in the University."[84]

So shortly after the creation of PRI, Harris was already exerting control over who could use its collections.

This first physical structure for PRI, "Block II" in Harris' long range plans ("Block I" was for some reason never built), as indicated earlier, was called the "Cabina" by all who labored there. Construction began in October, 1936 on "Block III", and by autumn of 1937, a second two-story structure was added, with a basement and a furnace so the open fireplace was no longer needed. According to the surviving records, "Block

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[77] In a previous letter Ries indicated the Department paid the shipping costs from Florida.

[78] A rare and valuable book on mollusks published in 1810.

[79] Helen Tucker to Gilbert D. Harris, April 23, 1935. Heinrich Ries Papers, 14/15/691, Box 1, File 1-61. RMC-KL, Cornell.

[80] Helen Tucker to Gilbert D. Harris, April 23, 1935. Heinrich Ries Papers, 14/15/691, Box 1, File 1-61. RMC-KL, Cornell.

[81] Helen Tucker to Katherine Palmer, September, 7, 1935. Heinrich Ries Papers, 14/15/691, Box 1, File 1-61. RMC-KL, Cornell.

[82] Lois (Schoonover) Kent.

[83] Helen Tucker to Gilbert D. Harris, January 28, 1936. Heinrich Ries Papers, 14/15/691, Box 1, File 1-61. RMC-KL, Cornell.

[84] Un-dated and un-signed copy of a letter from Helen Tucker to Gilbert D. Harris. Heinrich Ries Papers, 14/15/691, Box 1, File 1-61. RMC-KL, Cornell.

III" cost $4,187.01[85]. Although the Institution's Board of Trustees voted to expand the facilities in April, 1944, not until 1948, after the end of World War II, was "Block IV" added (Palmer, 1982). All three buildings were interconnected by a series of doors and steps, making it quite easy for the uninitiated to become lost trying to go from one room to the other.

The expanded Cabina became the home not only for Harris' collections, but also for his printing presses. From about 1934, even after the construction of the Cabina, until 1948, Harris printed his journals on a rotary-cylinder press that he had installed in the basement of his home. There was also a platen press still in McGraw Hall at Cornell University, where it had caused structural problems because of its weight and vibration. In 1948, both presses were moved into the basement of the PRI. Still preserved at PRI is the small platen press on which Harris did his original printing.[86]

PRI was not established as part of Cornell, and as an Institution, it has never had any official connection with the University; it is a separate scientific and educational organization. Not everyone has understood that fact. In Bishop's *A History of Cornell*, when describing changes at the University after world War II, he said:

> "The University took over the Paleontological Research Institution developed by Professor Gilbert Dennison Harris '86." (Bishop, 1962, p. 582).

The media announcements that accompanied the founding probably are responsible for much of this misunderstanding. One story was headlined with, "Harris Turns Over Museum to Cornell"[87], but then the article went on to say that the museum was constructed in his back yard. Ironically, in the late 1960s, when PRI moved to a new and much larger location at the former orphanage of the International Order of Odd Fellows on West Hill in Ithaca, the old PRI buildings on Dearborn Place were purchased by Cornell for additional storage and research space for the geology department.

In a letter to *Science* in 1934, Harris indicated his reasons behind the founding of PRI:

> "Facilities for the conserving of types have been hitherto lacking here; hence a fireproof building has been privately constructed and deeded to this institution . . .
>
> "There are three leading ideas underlying the establishment of this institution:
>
> "(1) To prevent the labor and valuable acquisitions of each generation from being wasted or lost, as is too frequently the case in educational institutions without proper museum facilities.
>
> "(2) To furnish temporary working facilities for paleontological students home from abroad or not connected with regular university or museum organizations.
>
> "(3) To serve as a regional center (since our country is large and not unicentric as is France) where local young students may see actual investigation going on and hence, perhaps, become interested in this branch of science." (Harris, 1934a, p. 381)

Yet, idea number (3) notwithstanding, for most of its history PRI has been essentially invisible to the local region. It existed behind Harris' house as a private domain for him, his students, and a few scholars who were involved in Tertiary paleontological research. Except for the postal workers who handled the journals when each issue was mailed, there was little community interaction. In many respects Harris was not fulfilling the spirit of the "educational" charter; in another he was doing exactly what he set out to do. Little wonder the local people have been so confused about PRI over the years.

In fact, according to Harris' own words, it was never his intention to include a real "public" aspect to his Institution's activities[88] beyond the occasional visit by school groups and local student clubs. In a talk Harris gave in June, 1939, to a group of natural history students visiting PRI, he revealed much about his perception of the Institution and why it was founded, and expanded somewhat on the ideas he had published in *Science* five years earlier. First and foremost, he still felt it was necessary to preserve collections gathered over 40–50 years of work, especially the generic and specific types, to keep the material from being "dumped in the ash barrel." The continuity of work could be assured by preserving the material, which required, of course, a fireproof structure. Harris felt that any educational institution becomes, essentially, the record of its graduates, and he wanted to preserve something to which the graduates could return. Such an organization would give the students an opportunity to do the necessary work to gain eminence in their field. In Harris' view, this could not be done without the proper institution, and his Institution was to be "of, by, and for paleontologists" and it would be limited primarily to Tertiary paleontology[89].

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[85] Statements from A. H. McPherson & Son, Contractors and Builders, January 5, 1937 and August 31, 1937. HA-PRI, Ithaca, NY.

[86] Personal communication, Dr. Katherine Palmer, July 28, 1982. The press was still at PRI in 1995.

[87] Newspaper and date are not identified, but it is assumed to appeared in the *Ithaca Journal* shortly after January 13, 1934 as the article was printed only a few days after the first Board of Directors Meeting which was held on that date. Heinrich Ries Papers, 14/15/691, Box 1, File 1-86.

[88] Beginning in the early 1990s, PRI began to improve its public role through an active association with the local public schools to improve earth science teaching though school visits, student field trips, and other educational programs, as well as expanded exhibits and educational programs at the West Hill building.

His statements in a letter to the PRI members in 1949 show that he had not altered his thinking during the ensuing 10 years. Indeed the 1949 letter echoes two of the four conditions which prompted him to create PRI 17 years earlier; namely having an organization not under the control of a larger entity, and preservation of collections. According to the letter, however, in Harris' mind PRI really started with the founding of *Bulletins of American Paleontology* in 1895, and the soul of the Institution was "research work", but he added:

> "The primal object of this Institution is to furnish a suitable retreat for those workers who desire to carry on investigations connected with their own collections, but who have no permanent affiliation with any large organizations, such as public surveys, museums, universities, etc. Since all work is pursued on a strictly voluntary basis, funds received (from sale of publications, membership fees, donations) can be applied to building, equipment, publication, and an eventual endowment fund.
>
> "A second, and by no means unimportant, function of this Institution is the preservation of paleontological materials that might otherwise be lost.[90] This applies, for example, to cuttings from wells in territories of abandon leases and collections from seldom-visited localities. The success in accumulating such collections and funds for their study and preservation will depend on the alertness of the members.
>
> "And, indeed, if the Institution itself is to continue and prosper, it will only be because of *a shared faith and feeling of responsibility*." [Emphasis in the original.] (Letter to PRI members by G. D. Harris, May, 1949; reproduced in Palmer, 1982, pp. 22–23).

Thus, PRI remains a unique institution, housing and caring for enormous fossil and Recent mollusk collections (the "type and figured collection" now exceeds 33,000 specimens; the non-type collections are estimated to contain more than 1.6 million specimens, placing them firmly among the 10 largest invertebrate fossil collections in the United States[91]). Until recently, few people ever saw this material, however, for public exhibit space in the West Hill building is minimal[92]. PRI publishes several scholarly publications, but is not an academic organization in the conventional sense, for it depends heavily on volunteers, and operates with only a small number of paid, full-time staff supporting its activities. PRI continues to be the world's only private organization devoted solely to advancing and preserving the science of paleontology, an increasingly important role at a time when many universities are closing or reducing their paleontology programs.

In 1984, after the last surviving member of the party who laid the cornerstone had died, Peter Hoover, then the Director of PRI, and I decided it was time to open the cinder-block cornerstone. If it contained anything of historical interest, we felt, it would be better to remove and preserve those items than to leave them in the block that had become quite porous with age. Accordingly, on July 19, 1984, Dr. Hoover carefully opened the cinder block cornerstone in the presence of several very interested people. Inside were the badly deteriorated remains of the envelopes that held the articles deposited by those who were present at the laying of the stone.[93]

All but one person had deposited a Tertiary fossil in an envelope, and on each envelope they had written both the name of the fossil and his or her own name. Naturally enough, Harris's fossil was *Ecphora*, the symbol of the PRI and the name he gave to his last boat. Rebecca Harris, his daughter, was the only one who did not use a fossil for her remembrance. Instead, she placed a small Joan of Arc medallion in the cinder block, and with it was a card on which she had written:

> "Joan of Arc also saw visions and dreamed dreams."

Those were, and still are, fitting words, for her father's dream did come true. Through the dedication, loyalty, and sheer hard work of his students, friends, and fellow paleontologists, the publications and the Paleontological Research Institution he began are alive and well as we near the end of the Twentieth Century.

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[89] Although the complete text of the Harris talk no longer exists, a student, Lois Schoonover, later Mrs. Lois Kent, took detailed notes and these notes are the source used for the information in this paragraph. All quotations are from these notes. HA-PRI, Ithaca, NY.

[90] As late as the last two decades of the Twentieth Century, drawers of fossils still were being transferred from the Department of Geological Sciences at Cornell to PRI. Harris' fear of what might happen to the department collections in later years has become a reality, but fortunately, his PRI exists to save the material.

[91] Warren Allmon, person communication, August 1, 1995.

[92] During the summer of 1995, PRI created a temporary public exhibit of material in a building on The Commons in downtown Ithaca. The centerpieces of the exhibit were mechanical dinosaur models, but accompanying materials came from PRI collections and the PRI staff designed the entire exhibit. All told, more than 100,000 people viewed PRI exhibits or participated in Institution-sponsored programs in 1995. A fund drive for a suitable public museum has been started.

[93] The articles removed are now in the PRI Archives.

CHAPTER 10. FINAL WORDS

Gilbert Dennison Harris rose from humble beginnings on a farm near Jamestown, New York to be one of the premier paleontologists of his day. Through his students, publications, and professional consulting, he had a major impact on our understanding of the fossils and stratigraphy of the Tertiary rocks of the Atlantic and Gulf Coastal Plains. Harris had great energy for doing paleontological research; he was really able to go out and "get the job done", efficiently and quickly. During one trip late in his career, as he and Palmer were doing some roadside collecting they were managing to stay ahead of a road crew seeding the road cuts right behind them[1]. This enthusiasm he passed along to his students. According to Druid Wilson, few people have ever traced a single unit for over 1,000 miles as Harris did, and Wilson feels he deserves a place alongside Conrad, Aldrich, Lea, and others, as one of the all time giants of Tertiary paleontology[2]. Certainly some of his paleontological publications set a standard for the profession, and several of his papers are still considered the definitive work for particular groups of fossils or time intervals. The primary key to his good work rested in the fact that Harris was a good illustrator who supported his illustrations with the appropriate descriptions[3]. Even today, many, perhaps most, of the species that he first described are still considered valid.

Once, when asked late in his life how he would like fellow geologists to think of him, Harris replied, perhaps with false modesty, "As a beginner in a limited number of branches of geologic sciences." And when asked were there any particular personal features he would like to be remembered, he offered two:

> "Building of boats for geologic excursions before the days of automobiles[.]
>
> "Establishment of the Paleontological Research Institution at Ithaca for volunteer research workers [.]"[4]

Of all his accomplishments, these were the most personal to him.

Based upon their success, for most of his students Harris fulfilled the role of mentor in the finest tradition of the word. For a student seeking training in the field of paleontology as it existed 50 to 100 years ago, he or she could have done no better than to train under Gilbert Harris. At the time there were few places where students, even before they completed their studies, had the opportunity to serve in responsible positions with a state geological survey, but Harris' students could do just that while he headed the Survey for the State of Louisiana. And the fact that the professor had his own journal and was willing to publish student work, gave these students an almost ideal situation.

Yet, Harris was an enigmatic person; kind and generous, a wonderful mentor, and lasting friend, he could also be vindictive, mean, self-centered, and just downright ornery. In a few words, he was human. His legacy to paleontology lives on through his publications, the work of his students and his students' students and their students as the torch has been passed from generation to generation. But mostly his bequest to posterity is kept alive most tangibly though his journals and the Paleontological Research Institution which he founded in 1932. During the Depression, a time when most people were wondering how they would survive another day, Harris was looking to a future beyond the present misery. He was able to infect others with his dream of the future, and that small band of followers gathered one warm afternoon in June on a plot of land behind his house, and in the form of a cinder block, laid the beginning of that dream.

As a student at Cornell Harris had the benefit of studying under Henry S. Williams, and some of his success as a teacher he owed to what he learned during his time with Williams. But Harris mostly learned by doing and he expected his students to follow that path, and many who followed his path found that it led to foreign shores. From Venezuela a student wrote to Harris:

> "I certainly appreciate the training you gave me and your help in getting me started in Paleontological work."[5]

Not everyone reacted well to this style of teaching, but those that did went on to make their mark in the world of paleontology; his students included Kenneth E. Caster, Monroe G. Cheney, Herdman F. Cleland, W. Storrs Cole, Stephen M. Herrick, Floyd Hodson, Charles W. Honess, Lois M. (Schoonover) Kent, Edward Kindle, Henry Leighton, Ralph A. Liddle, Carlotta J. Maury, Axel A. Olsson, Joviano A. A. Pacheco, Katherine V. W. Palmer, Irving Perrine, Charles S.

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[1] David Dockery, personal communication July 12, 1995.

[2] Druid Wilson, personal communication September 7, 1995.

[3] David Dockery, personal communication July 12, 1995.

[4] Question included in Walter E. Hopper to Gilbert D. Harris, July 1, 1950; answers included in unsigned carbon copy, Gilbert D. Harris to Walter E. Hopper, July 5, 1950. HA-PRI, Ithaca, NY.

[5] Floyd Hodson to Gilbert D. Harris, January 7, 1932. HA-PRI, Ithaca, NY.

Prosser, Percy E. Raymond, Leopold Reinecke, John L. Rich, Helen I. (Tucker) Rowland, Pearl G. Sheldon, Ernest R. Smith, Arthur C. Veatch, Walter A. Ver Wiebe, Norman E. Weisbord, John W. Wells, Francis L. Whitney, Druid Wilson, and Charles Yeakle, just to mention a few.

Harris also touched the lives of many who never majored in paleontology, but only had a class or two with him. Almost 35 years later they still remembered vividly their brief encounter:

> "You can scarcely be likely to remember me—just one of your elementary students of about 1913. I mean I took the lecture course in elementary paleontology up in your laboratory high in Mc Graw [*sic*], also your course in Geologic Mensuration and still have the notes! I also have a photo of you at the steering lever of your Cayuga Lake vessel." [Emphasis in the original.][6]

In many ways Harris was a driven man; he was not a person who could sit still for very long, even in "retirement." At age 73 he visited the University of California to study the Tertiary of the west coast. He celebrated his 82nd birthday while on a collecting trip to Florida, Alabama, and Georgia (Palmer, 1953c) which totaled over 3700 miles and lasted almost a month. Right up to his death he was actively engaged in paleontological research. His last paper was published just a few months before he died (Harris, 1951), and in part was based upon the samples collected during his recent excursions to the south. Well past his 80th birthday, he was still running the presses to print his journals. Perhaps Harris described it best with his Christmas Greeting sent in his 85th year:

> "We are happiest when our hobbies and our 'life's work' become identical." (Herrick *et al.*, 1953, p. 16A).

Katherine Palmer, who worked with Harris from 1921 until his death in 1952, remembered him thusly (Palmer, 1953b, p. 2624):

> "He was always stimulating and inspiring to those students of close contact and he continually planned training and provided opportunities for their scientific advancement. In turn he received steadfast loyalty and developed an idealism which is manifested in the projects which they in turn initiated or helped carry on. The monuments of basic endeavors which Professor Harris built along the way in paleontology and stratigraphy are bench marks from which the progress of those sciences can be measured. The worth of such factors is everlasting."

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[6] Albert G. Ingalls to Gilbert D. Harris, December 15, 1947. HA-PRI, ithaca, NY.

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PLATES

Plate 1.—Gilbert Harris in May, 1872, age 8. (Photo: HA-PRI, Ithaca, NY.)

Plate 2.—Gilbert Harris, ca. 1895, shortly after he began teaching at Cornell. (Photo: HA-PRI, Ithaca, NY.)

Plate 3.—Field crew from the Louisiana Geological Survey, 1905. Harris is second from the right. (Photo: HA-PRI, Ithaca, NY.)

Plate 4.—Harris at a tide gauge station near Weeks, Louisiana, 1905. (Photo: HA-PRI, Ithaca, NY.)

Plate 5.—Harris (bent over on the stern) inspects his new launch *Ecphora* at Champaign's Dock in Ithaca, 1914. (Photo: HA-PRI, Ithaca, NY.)

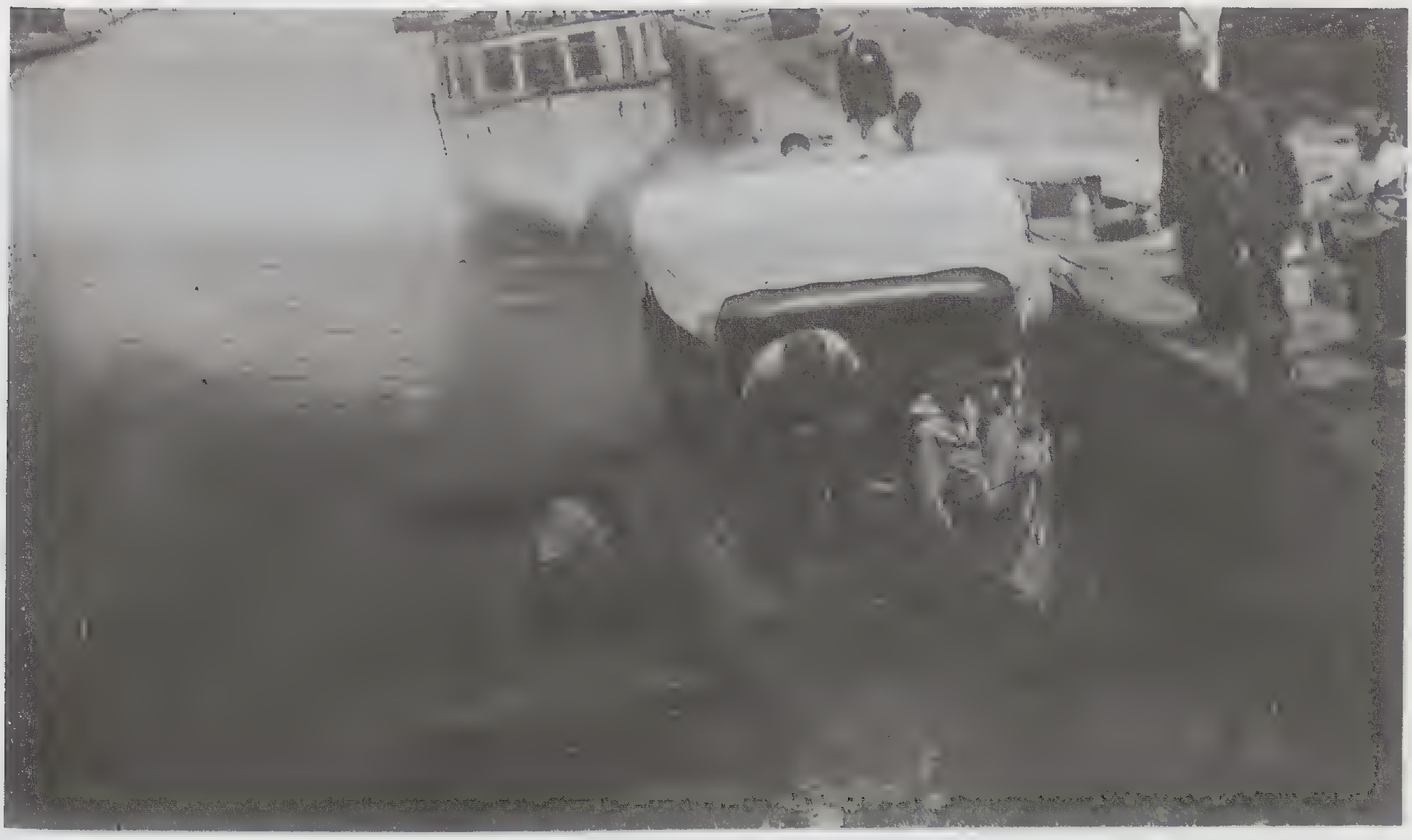

Plate 6.—Harris' launch *Ecphora*, Cornell pennant on the bow, passing through a lock on the Erie Canal, 1914. (Photo: HA-PRI, Ithaca, NY.)

Plate 7.—Harris at the helm of his launch *Ianthina*, date unknown. (Photo: HA-PRI, Ithaca, NY.)

Plate 8.—Class field trip to Yawger's Woods, on the shore of Cayuga Lake, ca. 1927-28. Harris is seated, right foreground. (Photo: HA-PRI, Ithaca, NY.)

Plate 9.—Harris and his students around the table in McGraw Hall, Cornell University, probably ca. 1915-1920. Left-to-right: A. Jacot, Karl Schmidt, Carlotta Maury, Harris, Axel Olsson, and E.R.Smith. (Photo: HA-PRI, Ithaca, NY.)

Plate 10.—A more formal (and possibly posed) photo, around the table in McGraw Hall, ca. 1921. Left-to-right: Axel Olsson, Harris, Pearl Sheldon, Carlotta Maury, Katherine Van Winkle Palmer. (Photo: HA-PRI, Ithaca, NY.)

Plate 11.—Carlotta Maury in the paleontology laboratory in McGraw Hall, date unknown. (Photo: HA-PRI, Ithaca, NY.)

Plate 12.—June 28, 1932, the cornerstone of the first building of the Paleontological Research Institution is laid near Harris' house on Dearborn Place in Ithaca. In rear, left-to-right: Axel Olsson, Katherine Palmer, Mrs. A.C.Gill, Beatrice Bolton, Rebecca Harris, Pearl Sheldon, Clara Harris, Prof. A.C.Gill. Foreground, Stephen Herrick (left) helps Harris set the stone. (Photo: HA-PRI, Ithaca, NY.)

Plate 13.—Harris' official faculty photograph, taken around the time of his retirement from Cornell in 1934. (Photo: Department of Manuscripts and University Archives, Cornell University.)

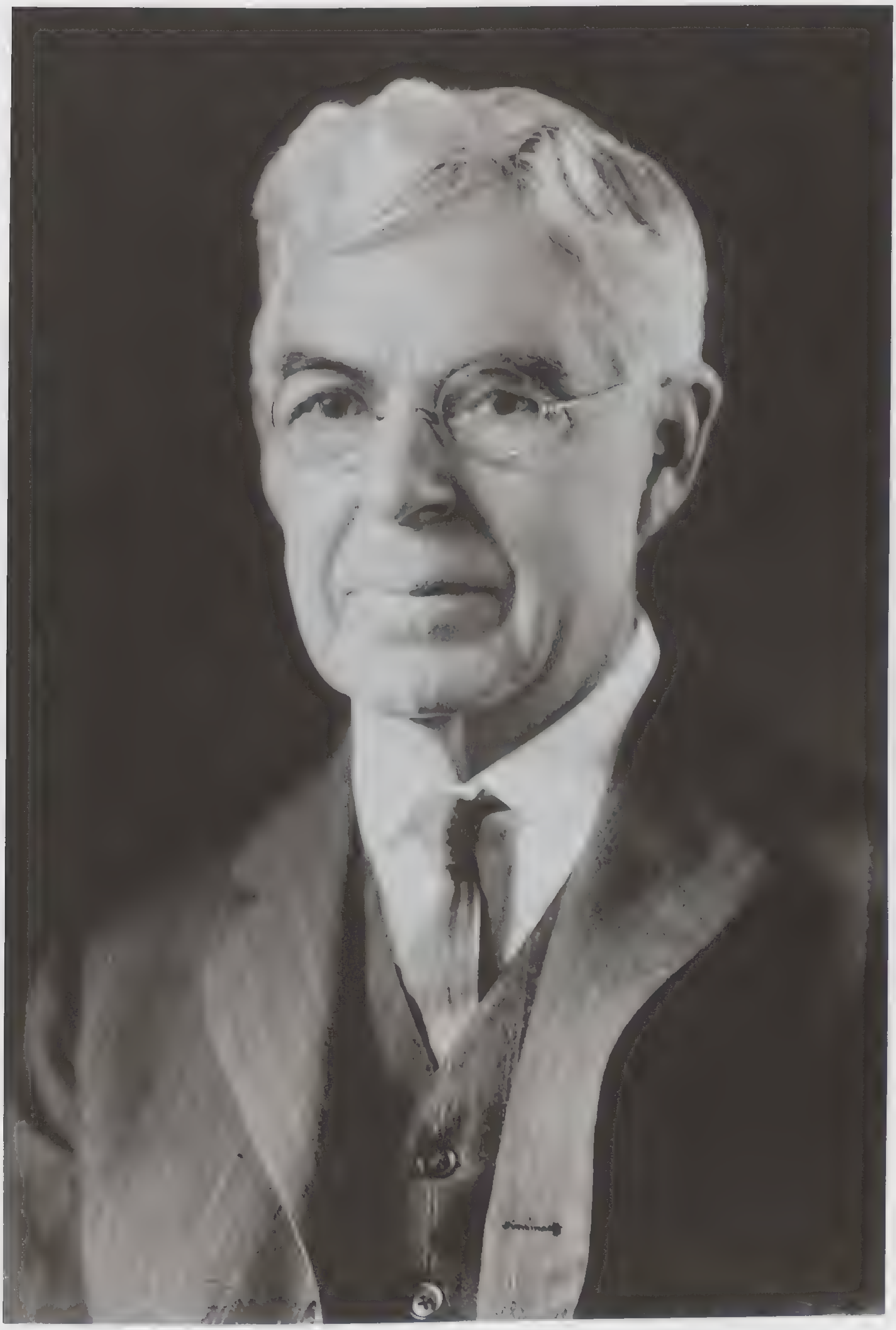

Plate 14.—Harris, age 85, with his rotary printing press in the basement of the Paleontological Research Institution on Dearborn Place in Ithaca, November, 1949. (Photo: HA-PRI, Ithaca, NY.)

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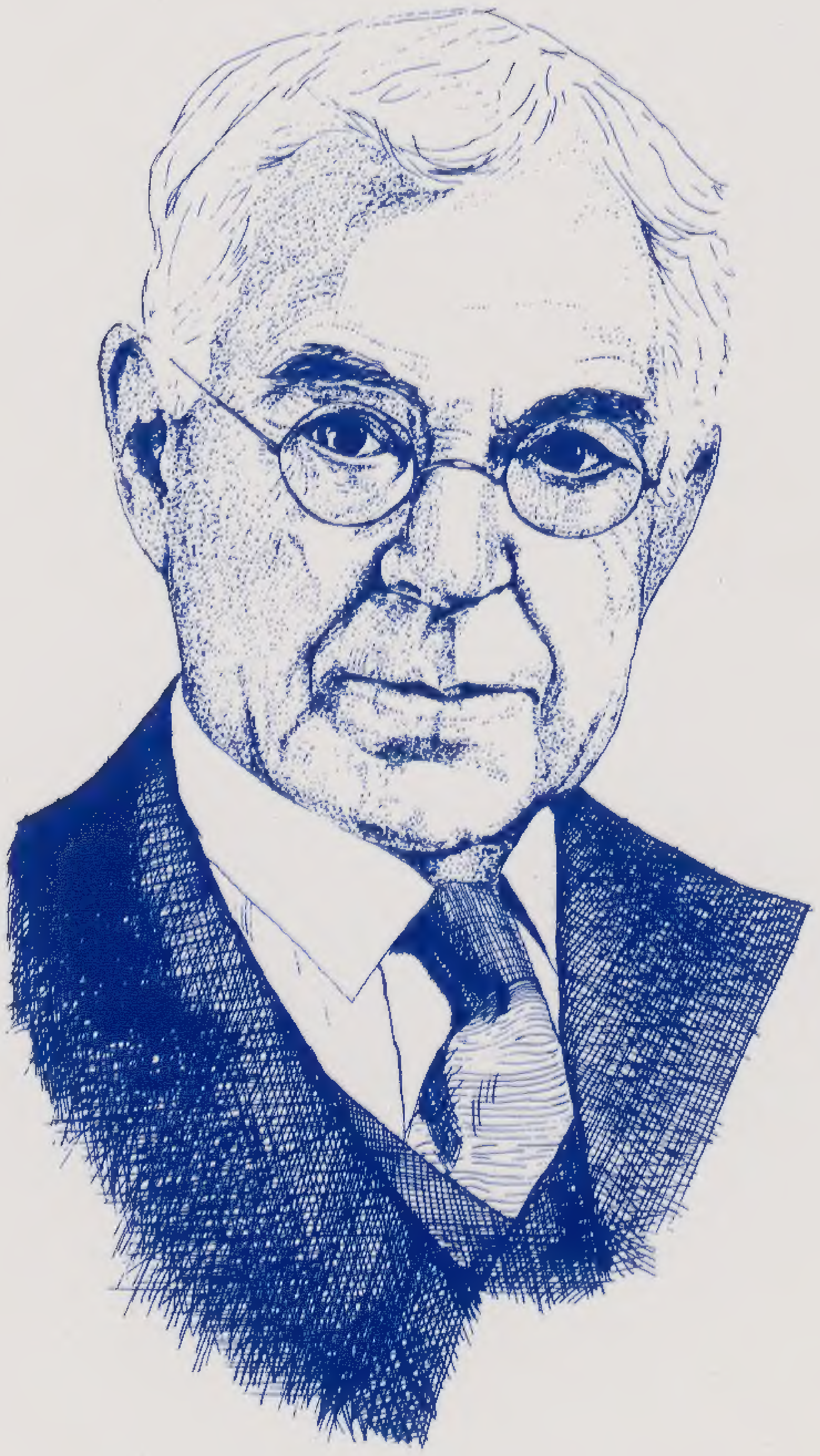

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